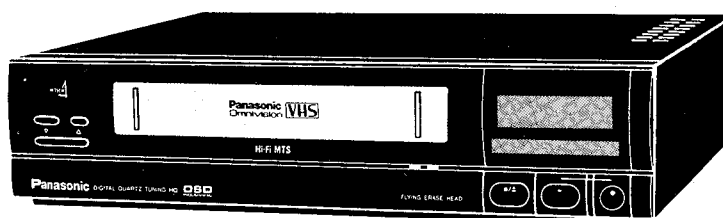


Service Manual

General Description
Adjustment Procedures
Block / Schematic Diagrams
Exploded Views / Parts List

Video Cassette Recorder
Panasonic® VHS HQ
NV-F65PX



SPECIFICATIONS

ITEM	SPECIFICATION	ITEM	SPECIFICATION
POWER	Source: 110/120/220/240V AC AUTO 50/60Hz	RF OUT	CH 3/CH 4 switchable 72dB μ (open voltage) 75 Ω unbalanced
	Consumption: 23 watts	TELEVISION SYSTEM	EIA Standard (525 lines, 60 fields) NTSC Color Signal TV Tuners: VHF Input: VHF CH 2 ~ CH 13 75 Ω unbalanced UHF Input: UHF CH 14 ~ CH 69 300 Ω balanced
VIDEO	Head: 4 rotary heads helical scanning system		SP: (33.35mm/sec), LP: (16.69mm/sec), SLP: (11.12mm/sec) Record/Playback Time: 8 Hrs with 160 min. type used in SLP mode FF/REW Time: Less than 5 min. (120 min. type tape)
	Heads: rotary heads 1 pair for SP recording playback and trick play (L-R heads)	TAPE SPEED	
AUDIO	OUTPUT: VIDEO OUTPUT Jack (Phono type) 1.0 Vp-p 75 Ω unbalanced	TAPE FORMAT	Tape width 1/2" (12.7mm) high density tape
	Head: Normal Mono: 1 stationary head Hi-Fi Stereo: 2 rotary heads	DIMENSIONS	360 (W) $\times$ 86 (H) $\times$ 295 (D) mm
	Input Level: AUDIO IN Jack (Phono type) -10dB 50k Ω unbalanced	WEIGHT	4.0kg
	Output Level: AUDIO OUT Jack (Phono type) -8dB 1k Ω unbalanced	STANDARD ACCESSORIES	1 pc. Wireless Remote Control 1 pc. 300 Ω -75 Ω Transformer 1 pc. Power Plug Adaptor 1 pc. RF Coaxial Cable
	Frequency Response: Normal Mono: SP: 100Hz ~ 8kHz LP: 100Hz ~ 6kHz SLP: 100Hz ~ 5kHz Hi-Fi Stereo: SP/LP/SLP: 20Hz ~ 20kHz		

Weight and dimensions shown are approximate.

Specifications are subject to change without notice.

Panasonic®

Matsushita Electric Industrial Co., Ltd.

Central P.O. Box 288, Osaka 530-91, Japan

CONTENTS

SECTION 1	Summary/Adjustment Procedures/ Schematic Diagrams/Exploded Views/ Replacement Parts List
SECTION 2	Block Diagrams

SECTION 1

ORDER NO. VRD8905M140

DATE OF ISSUE :5/89

Summary Adjustment Procedures Schematic Diagrams Exploded Views Replacement Parts List

MODEL NO.

NV-F65PX

CONTENTS

SAFETY PRECAUTIONS	1-1-2	UHF/VHF TUNER/TV DEMODULATOR	
SUMMARY		SCHEMATIC DIAGRAM	1-3-26
DESCRIPTION OF CONTROL	1-1-3	IR WIRELESS TRANSMITTER	
SERVICE NOTES AND CAUTIONS	1-1-7	SCHEMATIC DIAGRAM	1-3-29
ICs/TRs INFORMATION	1-1-15	INTERCONNECTION SCHEMATIC DIAGRAM	1-3-32
ADJUSTMENT PROCEDURES		MAIN (POWER SUPPLY/SERVO/AUDIO	
1. DISASSEMBLY OF CABINET PARTS	1-2-1	/SYSTEM CONTROL/SIGNAL PROCESS)	
2. ADJUSTMENT PROCEDURES	1-2-4	C.B.A.	1-3-36
SEVICE FIXTURES AND TOOLS	1-2-27	POWER SUPPLY ASS'Y	1-3-40
ELECTRICAL ADJUSTMENT PROCEDURES	1-2-28	UHF/VHF TUNER/TV DEMODULATOR ASS'Y	1-3-40
1. TEST EQUIPMENT	1-2-28	CAPSTAN/CYLINDER MOTOR DRIVE C.B.A. ...	1-3-42
2. HOW TO READ THE ADJUSTMENT		Hi-Fi AUDIO/MTS/SAP C.B.A.	1-3-43
PROCEDURES	1-2-28	TIMER/OPERATION I C.B.A.	1-3-46
3. ADJUSTMENT PROCEDURES	1-2-29	TIMER/OPERATION II C.B.A.	1-3-46
LOCATION OF TEST POINTS AND		IR WIRELESS TRANSMITTER UNIT	1-3-48
ADJUSTMENT POINTS	1-2-40	WAVEFORM PHOTOGRAPH	1-3-49
SCHEMATIC DIAGRAMS		VOLTAGE CHART	1-3-50
MAIN I (POWER SUPPLY/SERVO		EXPLODED VIEWS	
/SYSTEM CONTROL)/SMALL CIRCUIT		1. TRANSPORT SECTION	1-4-1
BOARDS SCHEMATIC DIAGRAM	1-3-1	2. MOVING MECHANISM SECTION	1-4-2
MAIN II (AUDIO/SIGNAL PROCESS)		3. CASSETTE UP MECHANISM SECTION	1-4-3
SCHEMATIC DIAGRAM	1-3-6	4. CHASSIS FRAME	
POWER SUPPLY SCHEMATIC DIAGRAM	1-3-11	& CASING PARTS SECTION	1-4-4
CAPSTAN/CYLINDER MOTOR DRIVE		5. PACKING PARTS	
SCHEMATIC DIAGRAM	1-3-14	& ACCESSORIES SECTION	1-4-5
Hi-Fi AUDIO/MTS/SAP SCHEMATIC		6. IR WIRELESS TRANSMITTER	
DIAGRAM	1-3-16	UNIT SECTION	1-4-5
TIMER/OPERATION I SCHEMATIC		REPLACEMENT PARTS LIST	
DIAGRAM	1-3-21	MECHANICAL REPLACEMENT	
TIMER/OPERATION II SCHEMATIC		PARTS LIST	1-5-2
DIAGRAM	1-3-25	ELECTRICAL REPLACEMENT	
		PARTS LIST	1-5-4

IMPORTANT SAFETY NOTICE

There are special components used in this equipment which are important for safety. These parts are marked by  in the schematic diagrams, exploded views and replacement parts list. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
2. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
3. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic cabinet part on the equipment such as screwheads, connectors, control shafts, etc. When the exposed metallic part has a return path to the chassis, the reading should be between $1\text{M}\Omega$ and $5.2\text{M}\Omega$. When the exposed metal does not have a return path to the chassis, the reading must be ∞ .

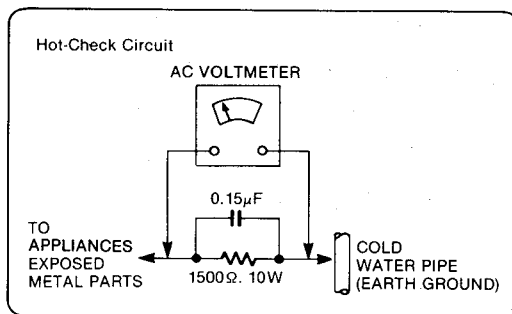


Figure 1

LEAKAGE CURRENT HOT CHECK (See figure 1.)

1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
2. Connect a 1.5K Ω , 10 watts resistor, in parallel with a 0.15 μF capacitor, between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS. A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot checks, leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

PREVENTION OF ELECTRO STATIC DISCHARGE (ESD) TO ELECTROSTATICALLY SENSITIVE (ES) DEVICES

Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electrostatically Sensitive (ES) Devices. Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by electro static discharge (ESD).

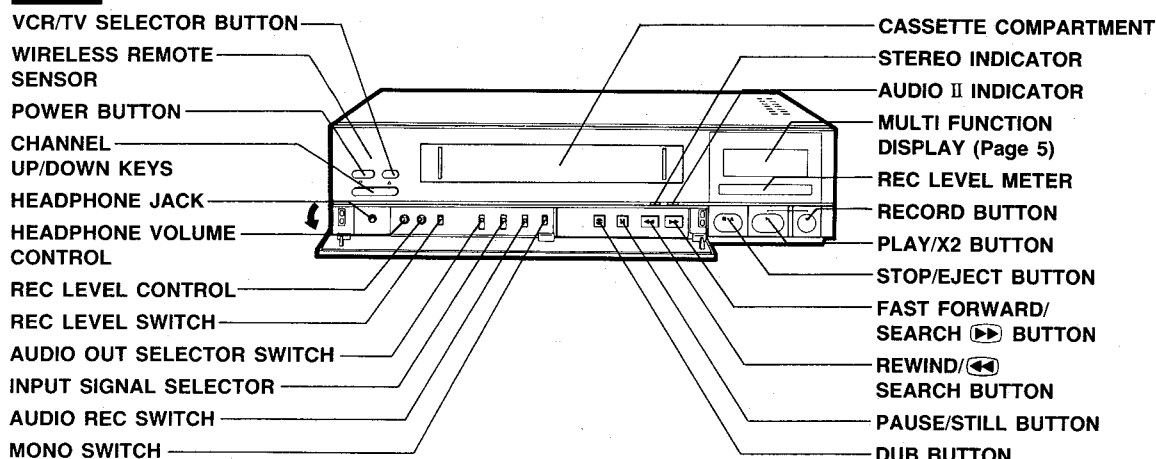
1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static solder removal device. Some solder removal devices not classified as "anti-static (ESD protected)" can generate electrical charge sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
CAUTION : Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

"NOTE to CATV system installer:

This reminder is provided to call the CATV system installer's attention to Article 820-22 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical."

DESCRIPTION OF CONTROLS

FRONT



POWER BUTTON

- To turn the VCR on and off.
- To set the VCR for unattended recordings after timer programming have been completed.

HEADPHONE JACK

To connect a Headphone.

HEADPHONE VOLUME CONTROL

To adjust sound level.

REC LEVEL CONTROL

For manual adjustment of Audio Recording Level with Hi-Fi AUDIO sound, set the REC LEVEL Switch to MANUAL and adjust the REC LEVEL CONTROL until the REC LEVEL Meter reads around 0 dB. This position usually indicates the best sound reproduction.

REC LEVEL SWITCH

When this switch is in AUTO position, the audio recording level is automatically adjusted.

AUDIO OUT SELECTOR SWITCH

To select the type of audio sound and channel combination you desire to monitor or playback for the TV speaker, a Headphone, or AUDIO LINE OUT.

INPUT SIGNAL SELECTOR

LINE: For re-recording or camera recording.
"LINE" will appear automatically for a few seconds on the TV screen when the INPUT SIGNAL SELECTOR is set to the LINE position.

TUNER: For regular TV or CABLE TV recording and Audio Multi-Plex recording (when applicable).

AUDIO 2 CH: For simulcast (FM stereo) recording.

AUDIO REC SWITCH

Use this switch to select the audio signal you wish to record when an AUDIO MULTI-PLEX signal is received.

MONO SWITCH

While recording weak Stereo Broadcasts, set the MONO Switch to ON for a monaural recording with less noise.

STEREO INDICATOR

Lights up when a stereo program is being received.

AUDIO II INDICATOR

Lights up when a second audio program is being received.

REC LEVEL METER

For monitoring the Audio Level during recording or playback.

PLAY/X2 BUTTON

To play back a tape.
In SP or SLP playback, tap this button once more for a rapid search at twice normal speed.

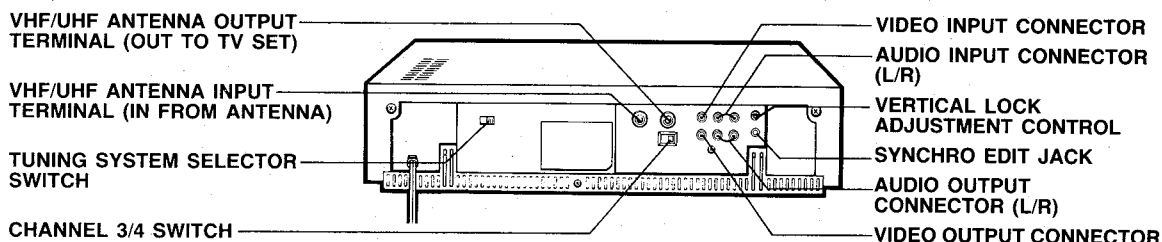
STOP/EJECT BUTTON

To stop the tape. To remove a cassette in the stop mode.

DUB BUTTON

Use this button when doing either Audio or Video Dubbing with the VCR.

REAR



CHANNEL 3/4 SWITCH

Set to channel 3 or 4 (whichever is not used for regular TV broadcasting in your area) to use your TV as a VCR program monitor.

VIDEO OUTPUT CONNECTOR

For video output connection to a monitor TV or another VCR.

VIDEO INPUT CONNECTOR

For video input connection from another VCR or a portable video camera power supply.

AUDIO INPUT CONNECTOR (L/R)

For connection from a portable video camera power supply, another VCR or other Audio Source's output connector.

VERTICAL LOCK ADJUSTMENT CONTROL

If necessary this control can be used to lock out vertical jitter in SP or SLP still mode.

SYNCHRO EDIT JACK

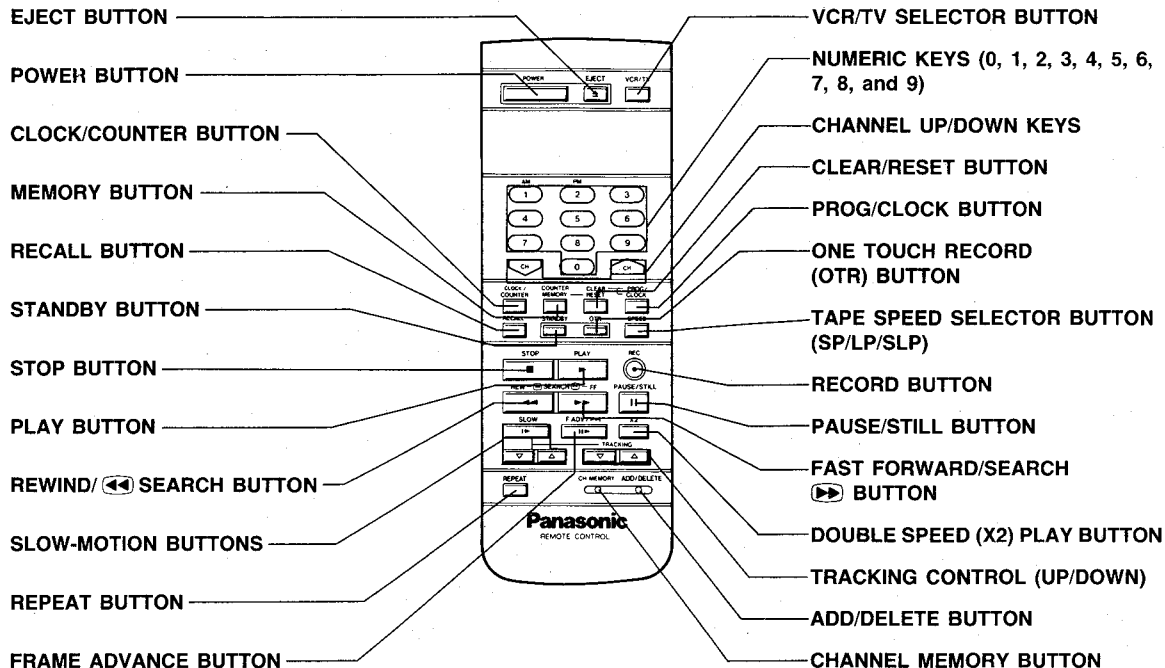
AUDIO OUTPUT CONNECTOR (L/R)

For connection to an audio input connector on a monitor TV, another VCR or an audio tape recorder.

DESCRIPTION OF CONTROLS (CONTINUED)

WIRELESS REMOTE CONTROL

Various VCR function controls are conveniently available with your Wireless Remote Control.



CLOCK/COUNTER BUTTON

Used to select the clock or tape counter on the Multi Function Display.

MEMORY BUTTON

Turns the Memory Stop feature on and off.

RECALL BUTTON

Press this button to display or clear the tape counter, date, time, function and channel number.

STANDBY BUTTON

Used along with the OTR Button to set delayed (Standby) OTR's.

REWIND/SEARCH BUTTON

To rewind tapes. Also, during playback press this button to view the picture in rapid reverse.

SLOW-MOTION BUTTONS

Press the SLOW Button during playback for slow motion on tapes recorded in SP and SLP speeds. The UP/DOWN Buttons let you adjust the slow motion speed from about 1/5 to about 1/60 of normal speed.

REPEAT BUTTON

Used to repeat playback of the continuously recorded portion of a tape.

FRAME ADVANCE BUTTON

Press to advance the picture frame-by-frame while viewing an SP or SLP still picture.

VCR/TV SELECTOR BUTTON

Selects the signal source that your TV receives.

VCR position: To view playback or to monitor video recordings. "VCR" appears on the Multi Function Display.

TV position: To watch TV or to view one program while recording a different program. When this is set to TV, there is no indication on the Multi Function Display.

CLEAR/RESET BUTTON

CLEAR BUTTON

Press this button to clear the settings for the displayed program contents. While setting the clock or a program, each press of this button starts the digit to the left flashing for correction.

RESET BUTTON

Resets the Tape Counter when it is displayed.

PROG/CLOCK BUTTON

Used for setting the clock, programming the timer and displaying a calendar.

ONE TOUCH RECORD (OTR) BUTTON

Select the channel and press the ONE TOUCH RECORD Button to start recording immediately for 30 minutes to 4 hours, or until the tape ends. In any case, power shut off is automatic.

TAPE SPEED SELECTOR (SP/LP/SLP) BUTTON

Set this selector for the desired recording speed.

PAUSE/STILL BUTTON

To temporarily stop the tape during recording or to view a still picture during playback.

FAST FORWARD/SEARCH BUTTON

To rapidly advance the tape. Also, during playback press this button to do rapid forward visual search.

DOUBLE SPEED (X2) PLAY BUTTON

Press this button during playback of the tapes recorded in SP and SLP mode for rapid tape search at twice the normal speed.

TRACKING CONTROL

Use this control during playback or double speed playback if the image is partially obscured by bands of noise.

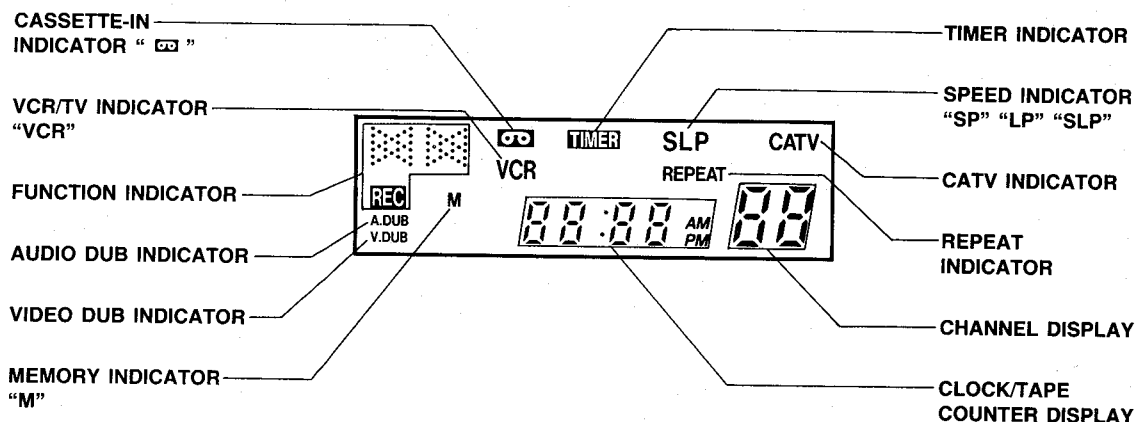
ADD/DELETE BUTTON

Used to add or delete a selected CHANNEL.

CHANNEL MEMORY BUTTON

For CHANNEL MEMORY programming, press this button to use the AUTO SET feature.

MULTI FUNCTION DISPLAY



CASSETTE-IN INDICATOR "C"

The three variations in this indication show the following conditions.

No "C" displayed: There is no cassette in the unit.

"C" displayed: There is a cassette in the unit and some interval to the end of the tape.

Flashing "C" display: The Automatic Rewind took place at the end of the tape during playback, recording or fast forward. The indicator continues flashing until the next mode is selected.

Also flashes if you attempt any recording when the cassette record tab is missing.

VCR/TV INDICATOR "VCR"

Appears when the VCR/TV Selector is set to VCR.

FUNCTION INDICATOR "F"

Shows the operation mode of VCR (PLAY, DOUBLE SPEED PLAY; REW, REC, FF, PAUSE, STILL, SEARCH, SLOW etc.)

AUDIO DUB INDICATOR

Shows that the VCR is in the audio dub or audio dub pause mode.

VIDEO DUB INDICATOR

Shows that the VCR is in the video dub or video dub pause mode.

MEMORY INDICATOR "M"

Indicates Memory control in use.

TIMER INDICATOR "T"

Indicates the VCR is set for unattended recording.

SPEED INDICATOR "SP" "LP" "SLP"

Shows the tape speed during recording and playback.

CATV INDICATOR

CATV indicates ANTENNA SYSTEM is set to the Cable TV mode.

REPEAT INDICATOR

CHANNEL DISPLAY "88"

The CHANNEL number selected is displayed.

An "L" will appear to let you know you have selected a Line input.

CLOCK/TAPE COUNTER DISPLAY

Displays the current time or tape counter.

FUNCTION INDICATOR SYMBOLS

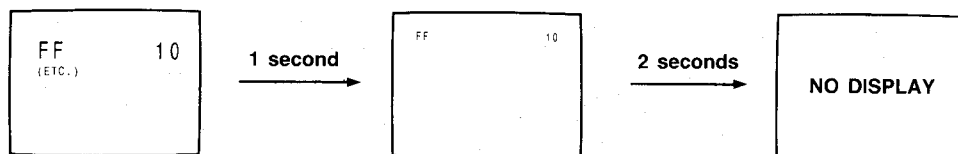
The following symbols will appear on the Multi Function Display to indicate the current mode or operation of the VCR. Some of these modes will also be momentarily displayed on the TV screen when you press the Operation Buttons.

PLAY, DOUBLE SPEED PLAY	REW, REW SEARCH	FF, FF SEARCH	REC
REC PAUSE	STILL	SLOW, FRAME ADVANCE	EJECT

DESCRIPTION OF CONTROLS (CONTINUED)

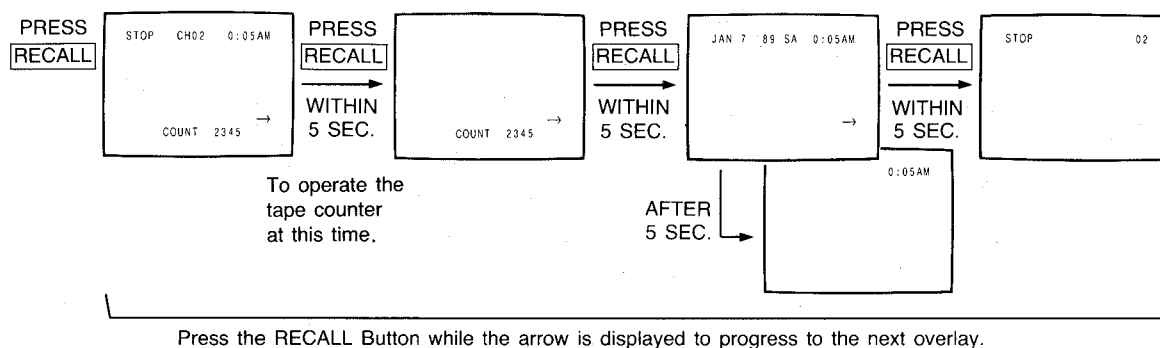
OSD INDICATIONS

Whenever you turn on the VCR with the TV on, when a function button (STOP, FF, etc.) is pressed, or when you change channels, a 3 second OSD appears. The function name and the channel number (if tuned) are displayed as a large overlay for 1 second, then again for 2 seconds in a smaller overlay.



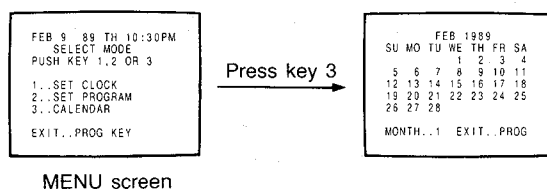
VCR STATUS DISPLAY

When the RECALL Button is pressed the sequence of overlays shown below will be displayed with what you have been viewing, as long as the arrow appears in the lower right (for about the first 5 seconds). After the arrow disappears, the overlay you have selected will remain on the screen until it is removed by the next press of the RECALL Button.



CALENDAR INDICATOR

To see the calendar for this month and next month, press the PROG Button (on the Remote Control) while you are watching TV. The MENU screen will appear; press key 3. The calendar for the current month appears. Press key 1 to change between this month and the next. Press the PROG Button to return to the screen.



BLANK TAPE INDICATION

If a blank section of the tape is encountered in the play mode or the channel you select has no broadcast, the TV screen will change to a solid blue field. The screen will remain blue until a recorded signal is again detected or an active channel is selected.

SERVICE NOTES AND CAUTIONS

When servicing, take notice of following items.

A. Service Position

Place the Unit as shown in Fig. 1 for servicing after removing the Timer/Operation I and Timer/Operation II C.B.A.s from the chassis frame and place them at the rear of VCR.

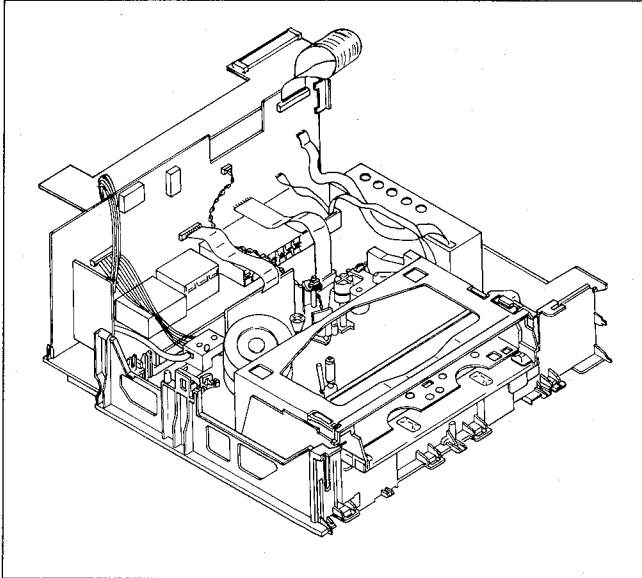


Fig. 1

Note :

When placing the unit into the Service Position. Beats may be seen in the picture. However, when the Red screw between Main C.B.A. and Power Supply ASS'Y is tightened after closing the Main C.B.A., the Beats in the picture will be eliminated. So, place a short ground jumper wire between the Power Supply and Main C.B.A. when in the Service Position.

B. Test Point Information

B-1. Actual Board on VCR

Previous models have had Test Points with a Test Pin protruding from the board as the Contact Point used for adjustment and checking. With this model, some Test Points have a Test Pin such as the Service Point (TP6001) and Simplified Fault Finding Point (TP6002). However, other Test Points do not have a Test Pin protruding through the board. Therefore, component leads are now used as Contact Points for adjustment and checking. In case of

other Test Points with no Test Pin or component leads, use the foil solder pad for connection of the measuring equipment. Some TPs are indicated on both the Component and Foil Side of the P.C.B. Some of these TPs are positioned differently between Component and Foil Side but they are on the same signal path.

B-2. Schematic and C.B.A. Diagrams in this Service Manual

- : Used for the indication of Test Point with Test Pin
- : Used for the indication of Test Point with Component Lead on Foil Side and Component Side
- : Used for the indication of Test Point with Component Lead on Foil Side
- : Used for the indication of Test Point with Component Lead on Component Side
- ⊗ : Used for the indication of Test Point with No Test Pin

B-3 Location of Test Points on page 1-2-40

- : Used for the indication of Test Point with Test Pin
- : Used for the indication of Test Point with No Test Pin
- : Used for the indication of Test Point with Component Lead

C. Service of Capstan / Cylinder Motor Drive C.B.A.

When servicing, avoid touching IC2602 on the Capstan/Cylinder Motor Drive C.B.A. because it is **HOT** during normal operation.

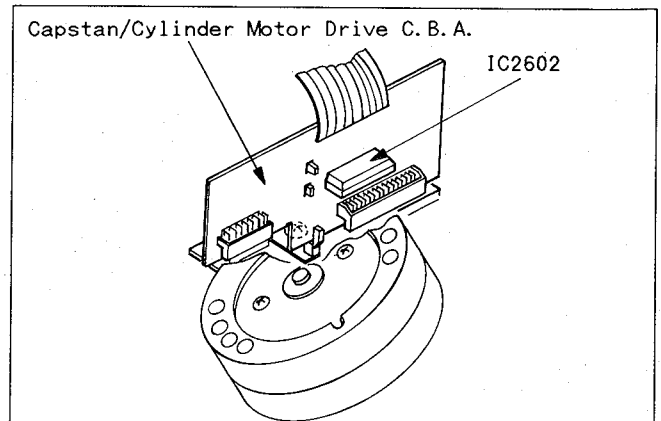


Fig. 2

D. Connection of the Flat Cables to Trap Connectors

Plug No.	No. of Pins	Location	Type of Trap Connectors
P6006 - P7501	19 Pin	Main C.B.A.	C
P1201 - P1001	9 Pin	Power Supply ASS'Y	C
P6005 - P1551	4 Pin	Takeup Photo TR ASS'Y of Cassette Up Unit	A
P6001 - P1553	14 Pin	Chassis P.C.B.	B
P6004 - A/C Head (Twisted leads)	2 Pin	Main C.B.A.	A
P6002 - P2603	11 Pin	Main C.B.A.	C

For the identification of Pin 1 of each Flat Cable, a different Color Identification Line is used.

For the Location of Pin 1 on the Trap Connectors, use the pin 1 indication on the Typical C.B.A.

Note :

1. For the twisted leads, the white lead is number one wire.
2. When connecting each Flat Cable, be sure they do not have crossed wires.

Location of Each Flat Cable

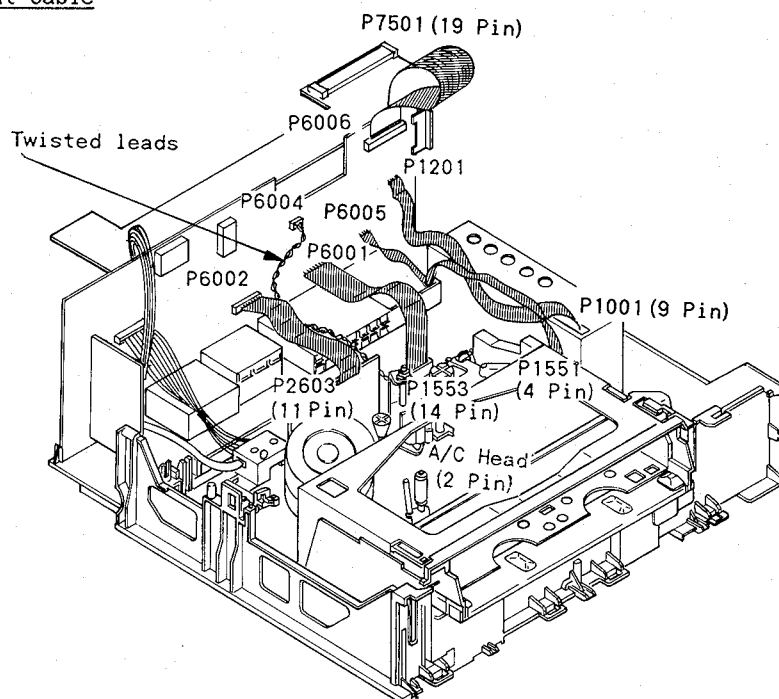


Fig. 3

(Removal or Installation of Flat Cables)

a. Removal

1. Type A used in the Takeup photo TR ASS'Y of Cassette Up Unit and Main C.B.A.

- 1) Pull Flat Cable out while pushing against the (A) portion of the Trap Connector in the direction indicated by arrow to unplug as shown in Fig. 4-1.

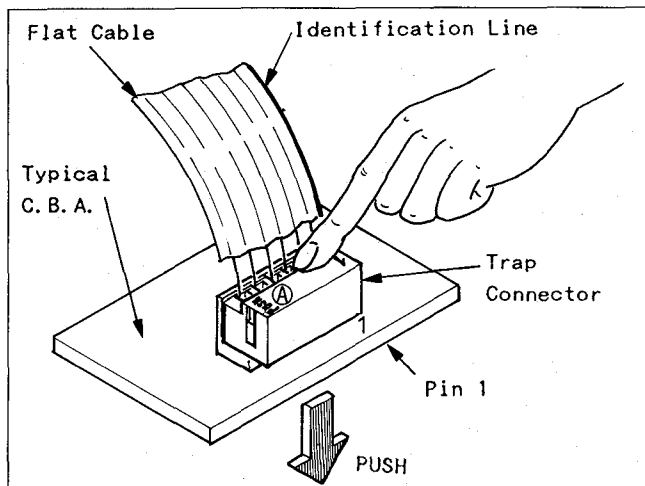


Fig. 4-1

Note :

After unplugging, make sure that the (A) portion of the Trap connector has returned to its original position.

2. Type B used in the Chassis P.C.B.

- 1) Pull Flat Cable out while pushing against both ends of the Trap Connector at the same time with needlenose pliers in the direction indicated by the arrow, to unplug as shown in Fig. 4-2.

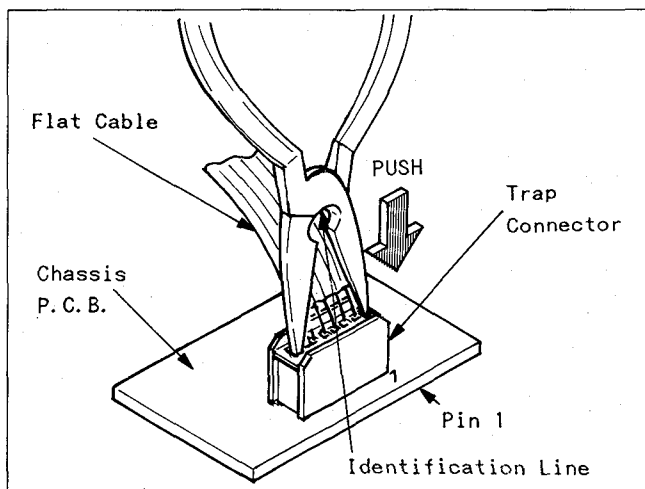


Fig. 4-2

3. Type C used in the Main C.B.A. and Power Supply ASS'Y.

- 1) Pull Flat Cable out minimizing stress by holding it securely to avoid damage of the individual wires as shown in Fig. 4-3.

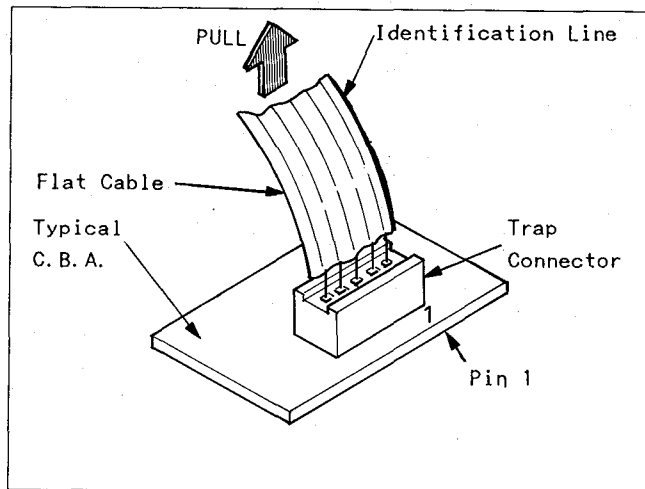


Fig. 4-3

b. Installation

1. Adjust the position of the Flat Cable so that the Identification Line on the Flat Cable aligns with Pin 1 of the Trap Connector in Fig. 4-1, 4-2 and 4-3.
2. Align the individual wires with their individual Trap Connector Holes. Then insert the Flat Cable wires into the Trap Connector.

Note :

After installation inspect the Connection to ensure that the individual wires are not bent and possibly touching an adjacent wire.

E. Simplified Fault Finding Point (TP6002)

This model has the Simplified Self-Diagnostic System to facilitate finding the cause when the Unit shuts off or stops automatically.

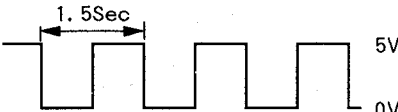
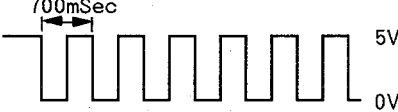
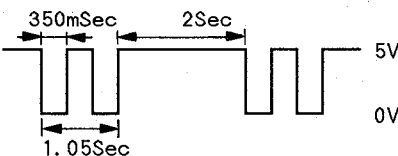
1. Preparation

Connect the OSCILLOSCOPE probe to TP6002 on the System Control Section of the Main C.B.A.

2. Indication

The Signal at TP6002 indicate the following causes.

Note : In normal condition, DC +5V Signal at TP6002 is displayed.

No.	Information	Indication	Cause and characteristic
1.	Takeup Reel Lock	Low Voltage  0V	There is no TAKEUP REEL Sensor Pulse for 5 seconds or 1 second (only SEARCH MODE). (Takeup Reel Sensor Pulse at pin 68 of IC6001)
2.	Cylinder Lock	0.7Hz Pulse (Duty 50%)  5V 0V	Cylinder Motor stops in the REC, PB, CUE, REVIEW, SLOW or STILL mode for 1 second. (Cylinder Lock(L) signal at pin 72 of IC6001)
3.	Exceeds Loading/Unloading Time	1.5Hz Pulse (Duty 50%)  5V 0V	Loading/unloading time exceeds the normal loading/unloading time, with no shift to the next mode.
4.	Exceeds Cassette Loading/Unloading Time	Intermittent Pulse  5V 0V	Cassette loading/unloading time exceeds the normal cassette loading/unloading time, with no shift to the next mode.

F. Service of Components underneath IC3001 and IC4201

It is easier and more efficient to replace some components that are located underneath the IC3001 and IC4201 after unsoldering pins on one side of the IC3001 and IC4201 from the Main C.B.A. and Hi-Fi Audio & MTS/SAP C.B.A. Then carefully bend the pins on the opposite side until the necessary clearance is obtained.

G. Cassette Tape for servicing with Left Side Down

This position is used only when servicing the Bottom portion of the Mechanical Chassis. If mis-loading of the cassette tape is encountered in this position, use a different tape or another brand of tape.

H. Variable Voltage Isolation Transformer

Because a Hot Chassis Ground is present in the Power Supply Circuit, an Isolation Transformer must be used. Also, in order to have the ability to increase the input voltage slowly, when troubleshooting this type Power Supply Circuit, a variable isolation transformer is required.

I. Service Test Point (TP6001)

The detection of the Supply/Takeup Photo Transistors, Reel Sensor and Cylinder Lock will be inhibited when TP6001 is grounded on the System Control Section of the Main C.B.A.

J. Set Tracking Control to the Neutral Position

Set Tracking Control to the Neutral position by using the Buttons on the IR Wireless Transmitter Unit. If this does not properly determine the Neutral position then eject the tape and reinsert it again, this will access the Neutral position of the Tracking Control.

K. Method for Manual Loading/Unloading of VCR

Turn the Center Pulley Unit in Fig. 5 clockwise (for loading) or counterclockwise (for unloading) while pushing the change lever (located on bottom side) in Fig. 6 or pushing the plunger of the solenoid (located on top side) in Fig. 7 as indicated by the arrow mark to release the lock.

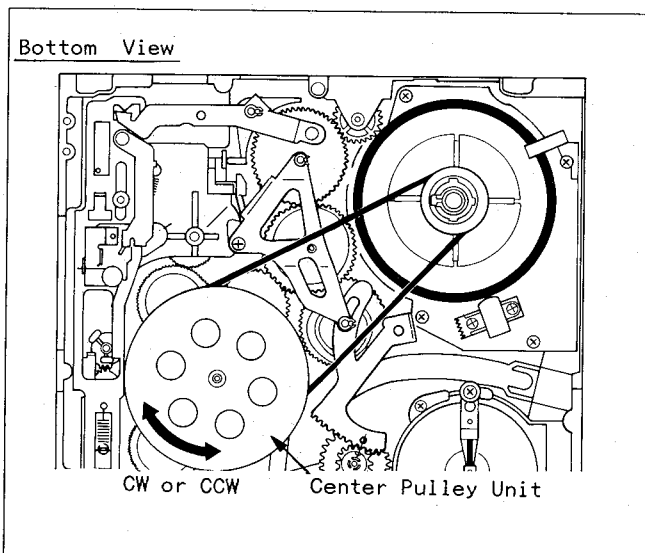


Fig. 5

Bottom View

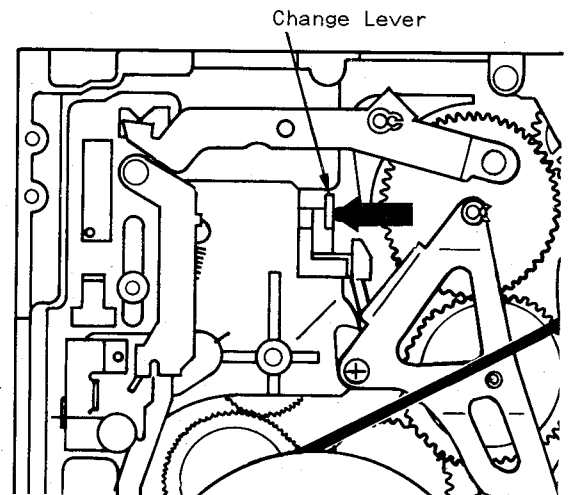


Fig. 6

Top View

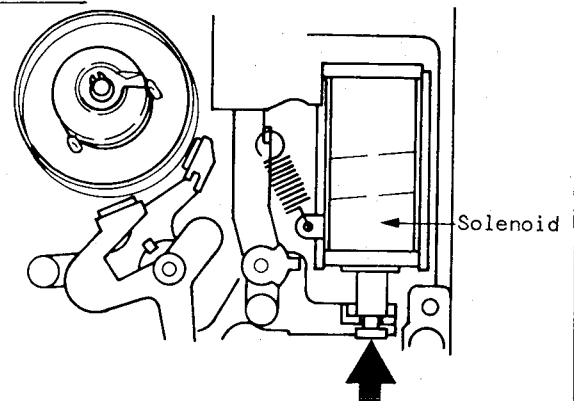


Fig. 7

L. How to place the Cassette Holder in the Down Condition without a Cassette Tape

In the Cassette Holder up condition, the VCR can not be operated, even if TP6001 on the System Control Section of the Main C.B.A. is grounded. To place the Cassette Holder in the down position without a cassette tape use the following procedure.

Method 1

1. Remove the Top Case and Front Panel then, connect AC plug.
2. First insert a ruler against the bottom right side of the Cassette Up Unit so it lies over the Cassette Opener to keep it in the down condition as shown in Fig. 8.
3. With the ruler in place, put the left index finger on the Reject Lever (L) as shown in Fig. 8 while pressing the Cassette Holder Unit into the loading condition with the left thumb.

4. Hold the ruler until the Cassette Holder Unit clears the second Locking Tab of the Side Plate (L) and passes beyond the cassette reject slot of the Side Plate (R). Quickly remove your index finger after the Cassette Holder clears the first Locking Tab of the Side Plate (L). Then immediately push down on the top of the Reject Lever (L) with the index finger through the hole in the Cassette Compartment Top Plate to clear the second Locking Tab. After clearing the second Locking Tab and the cassette reject slot, the Cassette Holder Unit will move into the down position by itself.

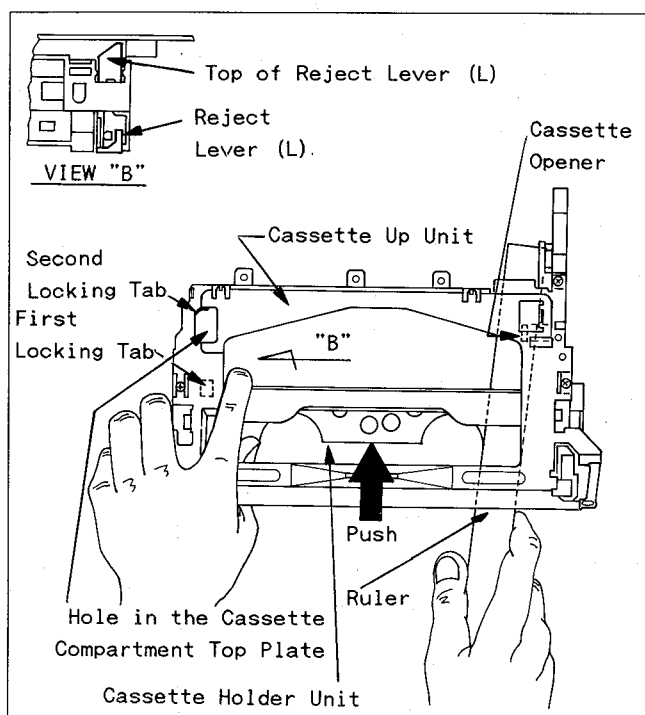


Fig. 8

Method 2 is an alternate method for loading with no tape.

Method 2

1. Route the 2 supply side Photo Transistor Leads so they are at the rear edge of the Cassette Compartment Top Plate and slightly open the Main C.B.A.
2. Then remove the Cassette Compartment Top Plate by removing 3 Screws (A) and 2 Screws (B). Remove the Cassette Holder Unit by pushing the Wiper Gear (L) Unit until the 5 pins of Cassette Holder Unit clear the slots of the Side Plates (L) and (R) as shown in Fig. 9.
3. Connect AC Plug.
4. Push the Wiper Gear (L) Unit to place the unit in the cassette down condition (no tape) as shown in Fig. 9.

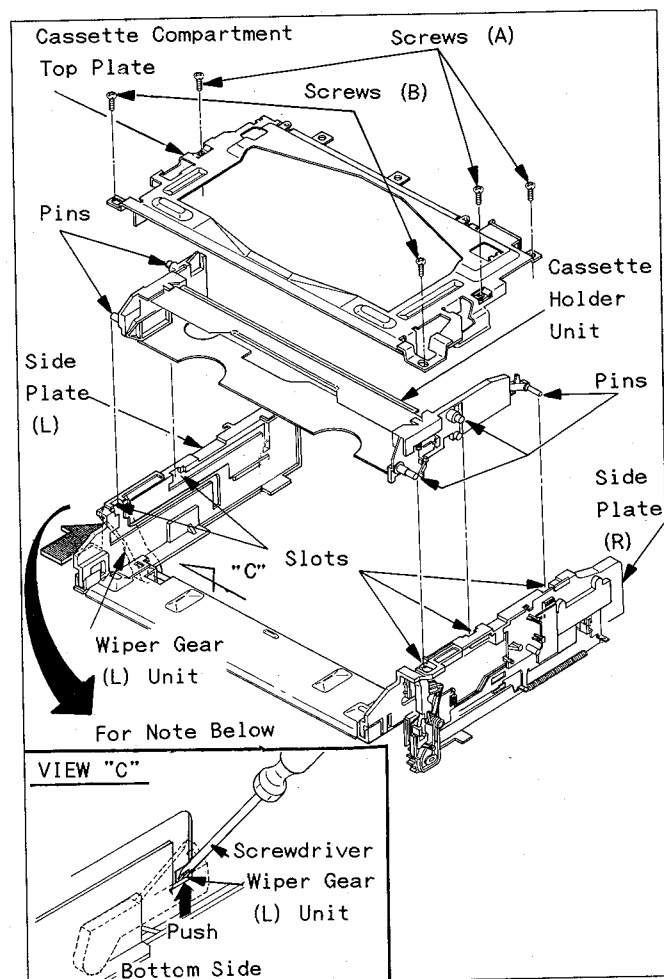


Fig. 9

Note :

If the cassette mechanism can not be placed in the Cassette-Up Condition when the STOP Button is pressed. Push the wiper Gear (L) Unit Up using a screwdriver as shown in box, Fig. 9. Now push the STOP Button to Eject.

M. Service of Capstan Rotor Unit

The Capstan Rotor Unit is supplied as a replacement part in a complete unit with a spring loaded Capstan pulley. Do not remove the Retaining Ring on the Capstan Pulley of the Capstan Rotor Unit.

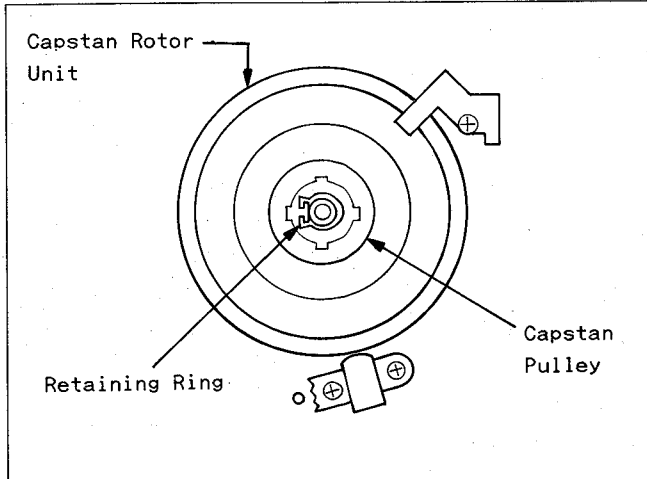


Fig. 10

N. Black Screws on the Chassis

Black Screws are used on the Mechanical Chassis to identify screws that require adjustment.

O. How to defeat the Auto Tracking Function

To defeat Auto Tracking Function place a jumper between TP6019 and GND on the System Control Section of the Main C.B.A. in Stop Mode to maintain the Neutral Position.

P. How to connect the Head Amp C.B.A. Unit

Hold the connector on the Cylinder Motor C.B.A., to minimize stressing the P.C.B. and causing damage while connecting P3502 on the Head Amp C.B.A. to the connector.

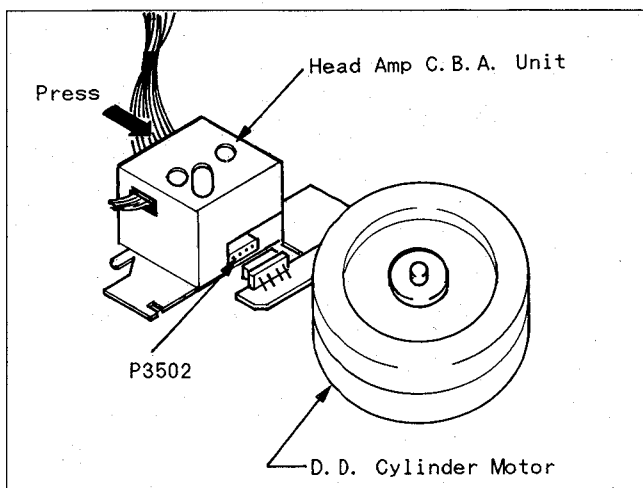


Fig. 11

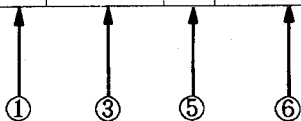
Q. Service the ANTENNA Terminal/RF Converter Unit

Since the Antenna Terminal/RF Converter Unit has already been adjusted at the factory, do not try to adjust the Audio (A) and Video (V) Output Level Controls and 4.5-MHz (F) Crystal Oscillator Frequency control. The Antenna Terminal/RF Converter Unit is supplied as a complete assembly as a replacement part.

R. How to read the Disassembly/Assembly Procedures

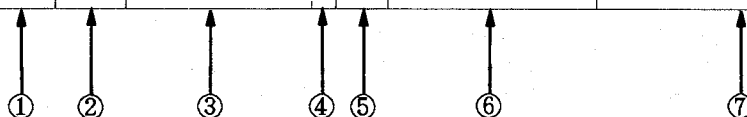
(For Cabinet Part)

STEP /LOC. No.	PART	REMOVAL		
		Fig. No.	REMOVE *UNLOCK/RELEASE/ UNPLUG/UNCLAMP/ UNSOLDER	Note
①	Bottom Cover	D2	2 (S-1), 3 (S-2)	----
②	Top Case	D3	2 (S-3)	----
③	Front Panel	D4	*3 (L-1) *3 (L-2)	1



(For Mechanical Part)

STEP /LOC. No.	START-ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE *UNHOOK/UNLOCK/ RELEASE/UNPLUG/ UNSOLDER	
①	1	PRESSURE CAM CAP	T	DM1 DM4	* (L-1)	-----
②	1	PRESSURE ROLLER ARM UNIT	T	DM1 DM4	-----	(+) <Note 1>
③	2	PRESSURE ROLLER LIFT CAM	T	DM1 DM4	-----	See. Alignment Procedure for Mechanism Item 11-8
④	3	PRESSURE REDUCTION GEAR	T	DM1 DM4	-----	(+) See. Alignment Procedures or Mechanism Item 11-2
⑤	5	LINK GEAR	T	DM1 DM4	(C-1) <Note 2>	(+) See. Alignment Procedures for Mechanism Item 11-6
⑥	6	MAIN BRAKE ASS'Y	T	DM1 DM5	2 (C-2), *2 (P-1), * (P-2) <Note 2>	(+) See. Setting Condition in Fig. DM5



① : Order of steps in Procedure

When reassembling, perform the step(s) in the reverse order.

These numbers are also used as the identification (location) No. of parts in Figures.

② : Starting No. followed by corresponding part which can be removed at this stage.

See example below.

Example : Pressure Cam Cap can be removed without removing any other parts.

But Pressure Roller Arm Unit can be removed only after removing Pressure Cam Cap (No. ①).

③ : Part to be removed or installed.

④ : Location of part.

T = Top

B = Bottom

⑤ : Fig. No. showing Procedure or Part Location.

⑥ : Identification of part to be removed, unhooked, unlocked, released, unplugged, unclamped or unsoldered.

P = Spring

W = Washer

C = Cut Washer

R = Retaining Ring

N = Nut

S = Screw

* = Unhook, unlock, release, unplug or unsolder

2 (C-2) = 2 Cut Washers (C-2)

⑦ : Adjustment information for installation.

= Condition for adjustment

(+) : Refer to Exploded Views for Lubrication information.

S. Replacement Procedure for Leadless (Chip) Component

The following procedures are recommended for the replacement of the leadless components used in this unit.

1. Preparation for replacement

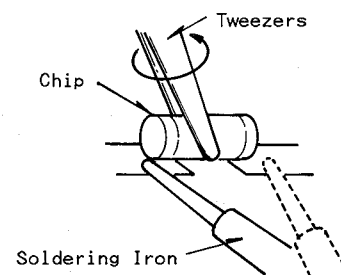
- Soldering Iron**
Use a pencil-type soldering iron using less than 30 watts.
- Solder**
Eutectic solder (Tin 63%, Lead 37%) is recommended.
- Soldering time**
Do not apply heat for more than 4 seconds.
- Preheating**
Leadless capacitor must be preheated before installation.
(130°C 150°C, For about two minutes.)

Note: a. Leadless component must not be reused after removal.
b. Excessive mechanical stress and rubbing of the component electrode must be avoided.

2. Removing the leadless component

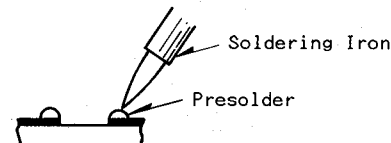
Grasp the leadless component body with tweezers and alternately apply heat to both electrodes. When the solder on both electrodes is melted, remove leadless component with a twisting motion.

Note: a. Do not attempt to lift the component off the board until the component is completely disconnected from the board by the twisting action.
b. Take care not to break the copper foil on printed board.

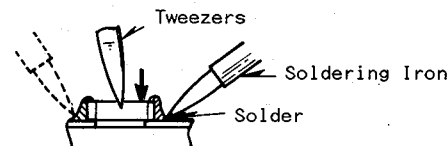


3. Installing the leadless component

- Presolder the contact points of the circuit board.



- Press the part downward with tweezers and solder both electrodes as shown below.



Note: Do not glue the replacement leadless component to the circuit board.

T. Special Note

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "ELECTROSTATICALLY SENSITIVE (ES) DEVICES" section of this service manual.

U. Voltage Measurement

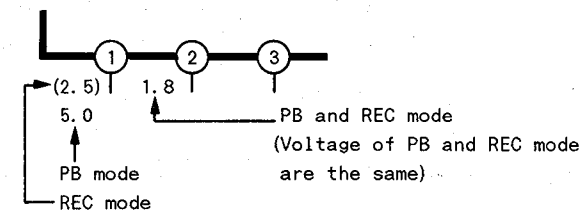
1. Voltage Chart

- Color bar signal in SP mode.
- : Unmeasurable or unnecessary to measure.

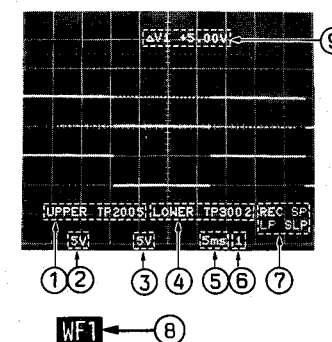
2. Schematic Diagram

- Audio Section
monoscope signal in SP REC and PB mode.
- Other Sections
color bar signal in SP REC and PB mode.

Note: Voltage Indications for REC and PB mode on Schematic are as shown below.



V. How to Read Waveform



- Connecting Point
- Volts/Div
- Volts/Div
- Connecting Point
- Time/Div
- Trigger Channel of the scope (1: UPPER, 2: LOWER)
- Operation Mode of VCR
- Waveform Point on Schematic
- Δ V1: Peak to Peak.

W. Indication for Zener Voltage of Zener Diodes

The Zener Voltage of Zener Diodes are indicated as such on schematic Diagrams.

Example: (6.2V) ---Zener Voltage

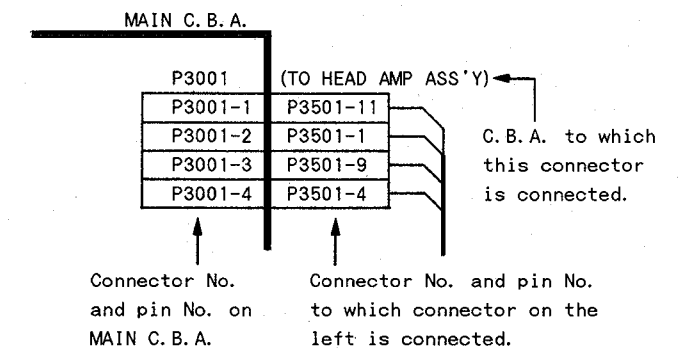
X. How to Identify Connectors on Schematic Diagrams

Each connector is labelled with a connector No. and Pin No. indicating what it is connected to, in other words, its counter part.

Connections between large P.C.B.'s and small circuit Boards are illustrated on the large P.C.B. schematics.

Use the interconnection schematic diagram to find the connections between associated connectors.

Example : The connections between C.B.A.s are as shown below.



GENERAL C.B.A./ASS'Y PARTS

VCRS0107
VCRS0109

MN67512VLQ
MN67520VLS
MN187129VLP
UPC1870GH
D75216AGF558

LM833M, MN3830S
LM4066B
MB90062PF103
MB90062-103A
UPD4053BG
UPD4570G2

AN1358
UPC2308ACA
UPC2308CA

AN3826NK
AN5180NK
AN6562

AN3396
PUA3228

2SB641
2SB643
2SB1050
2SD636
2SD973
2SD1330

2SA937M
2SC2021M
2SD1225M

2SB709
2SC2412K
2SC4417
2SC2712G
2SC2712Y
2SD601
2SD602

UN1211 (R1=10K, R2=10K)
UN1212 (R1=22K, R2=22K)

2SC3852
2SC3870
2SC4130
2SD1776

2SC3311

PN150NV

POWER SUPPLY ASS'Y ON3161-QR	TIMER/OPERATION I C.B.A. MN1280-L	CAPSTAN/CYLINDER MOTOR DRIVE C.B.A. AN3813K	Hi-Fi AUDIO/MTS/SAP C.B.A. M51132L UN2212(R1=22K, R2=22K) UN2213(R1=47K, R2=47K) DTC144EK(R1=47K, R2=47K) UN2112(R1=22K, R2=22K) UN2113(R1=47K, R2=47K) DTA144EK(R1=47K, R2=47K)
--	---	---	--

TIMER/OPERATION I C.B.A.

3 2 1

MN1280-L

**CAPSTAN/CYLINDER MOTOR
DRIVE C.B.A.**

The diagram shows a rectangular component with a central square opening. It has a series of pins or contacts along one edge. Two arrows indicate the direction of rotation: one curved arrow on the top surface and one straight arrow on the side.

AN3813K

Hi-Fi AUDIO/MTS/SAP C.B.A.

M51132L

UN2212 ($R_1=22K, R_2=22K$)
 UN2213 ($R_1=47K, R_2=47K$)
 DTC144EK ($R_1=47K, R_2=47K$)

UN2112 ($R_1=22K, R_2=22K$)
 UN2113 ($R_1=47K, R_2=47K$)
 DTA144EK ($R_1=47K, R_2=47K$)

MAIN C.B.A.				
VIDEO SIGNAL PROCESS SECTION 2SA933S 2SC1740S	AUDIO JACK SECTION UPC4570HA	SYSTEM CONTROL SECTION LM358P 2SD946(R1=200) 2SD947(R1=200)	DEMODULATOR SECTION DTC314TS(R1=10K, R2=OPEN) DTC114EA(R1=10K, R2=10K) DTC124EA(R1=22K, R2=22K) DTC143EA(R1=4.7K, R2=4.7K)	

AUDIO JACK SECTION

UPC4570HA

MAIN C.B.A.

SYSTEM CONTROL SECTION

LM358P

2SD946(R1=200)
2SD947(R1=200)

ECB

DTC114EA(R1=10K, R2=10K)
DTC124EA(R1=22K, R2=22K)
DTC143EA(R1=4.7K, R2=4.7K)

ECB

DEMODULATOR SECTION

DTC314TS(R1=10K, R2=OPEN)

**MECHANISM
CONNECTION ASS'Y**

Diagram illustrating the Mechanism Connection Assembly (ON2170-RS). The assembly consists of a central rectangular block with four wires extending from it, labeled C, A, E, and K.

MARKING	PARTS NO.	MARKING	PARTS NO.
A	2SB709	6C	UN2113
B	2SC2412K	8B	UN2212
W	2SD602	8C	UN2213
Y	2SD601	16	DTA144EK
6B	UN2112	26	DTC144EK

MARKING	PARTS NO.
MA	MA151A
MH	MA151K
MT	MA151WK

MARKING

H9

MA707

MARKING

MA

MA151A

MARKING

M1A

MA159

MARKING

M2D

MA121

MECHANICAL ADJUSTMENT PROCEDURES

1. DISASSEMBLY OF CABINET PARTS

1. DISASSEMBLY FLOW CHART

This flow chart indicates the disassembly steps of the cabinet parts and the P.C. Boards in order to gain access to item(s) to be serviced. When reassembling, perform the step(s) in the reverse order. Bend, route and dress the Flat Cables as they were originally. The Bottom Cover and Rear Frame can be removed separately.

Note :
When removing the Front Panel, work with care so as not to break the locking tabs on the panel.

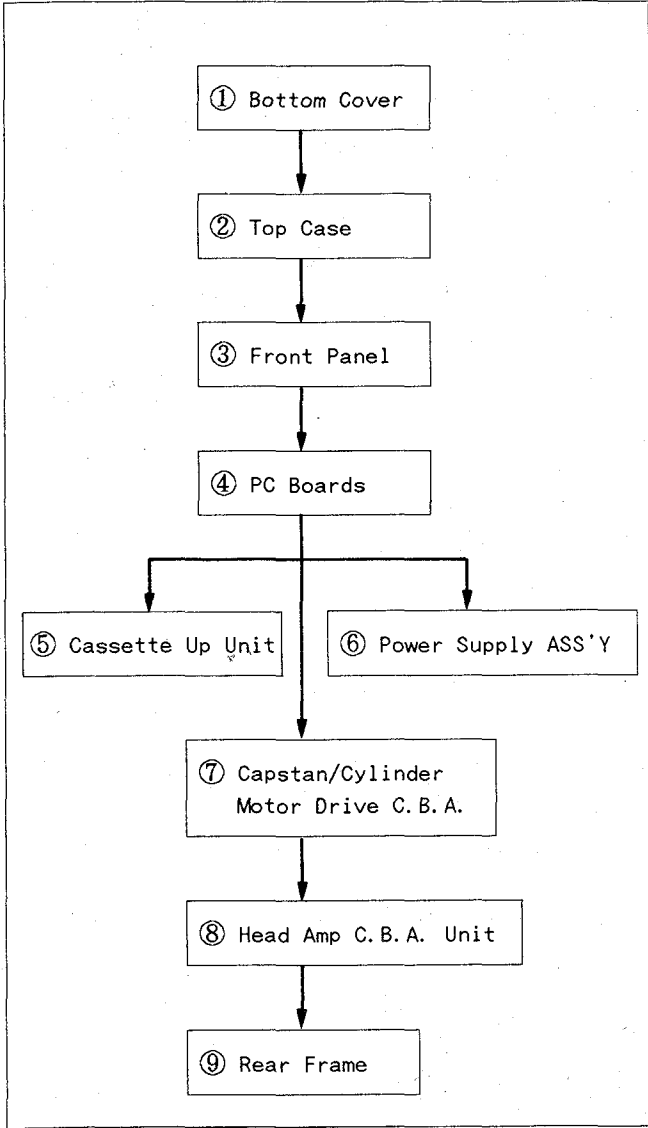


Fig. D1

2. DISASSEMBLY METHOD

STEP /LOC No.	PART	Fig. No.	REMOVAL	
			REMOVE *UNLOCK/RELEASE/ UNPLUG/UNCLAMP/ UNSOLDER	Note
①	Bottom Cover	D2	2 (S-1), 3 (S-2)	----
②	Top Case	D3	2 (S-3)	----
③	Front Panel	D4	*3 (L-1), *3 (L-2)	1
④	Timer/ operation I, Timer/ Operation II and Main C.B.A.s	D5	(S-4), (S-5), *2 (L-3), *6 (L-4)	2
⑤	Cassette Up Unit	D6	2 (S-6), 2 (S-7), *P1551	3
⑥	Power Supply ASS'Y	D7	*P1001, *(L-5) ----- *3 (L-6)	4 5
⑦	Capstan / Cylinder Motor Drive C.B.A.	D8	(S-8), *P2601 *P2602	6
⑧	Head Amp C.B.A. Unit	D9	2 (S-9), *P3501, *P3502, *P3004, *P6012	7
⑨	Rear Frame	D10	*2 (L-7), (S-10), *2 (L-8)	8

List of Abbreviations :
2 (S-1) = 2 Screws (S-1)
3 (L-1) = 3 Locking Tabs (L-1)

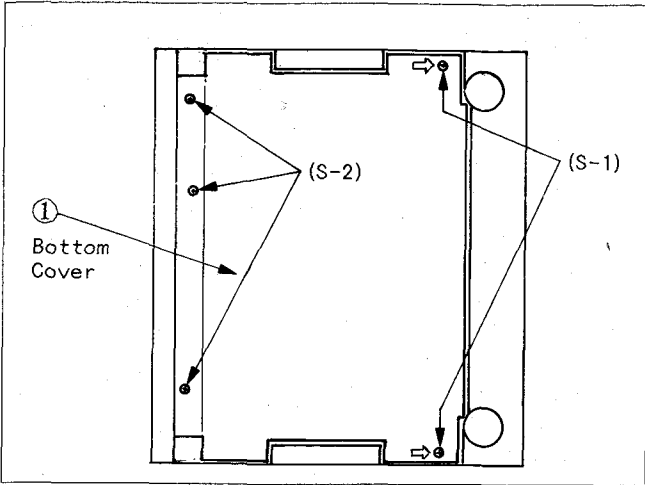


Fig. D2

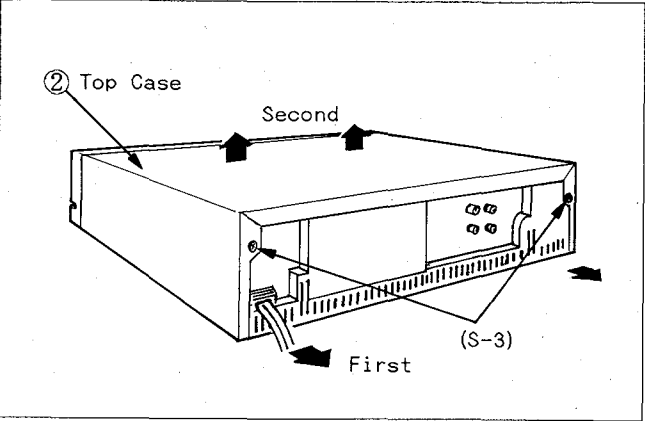


Fig. D3

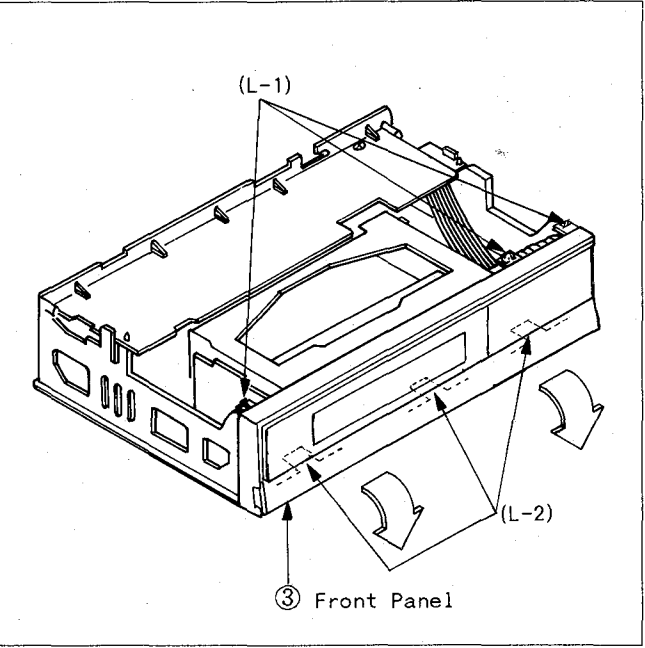


Fig. D4

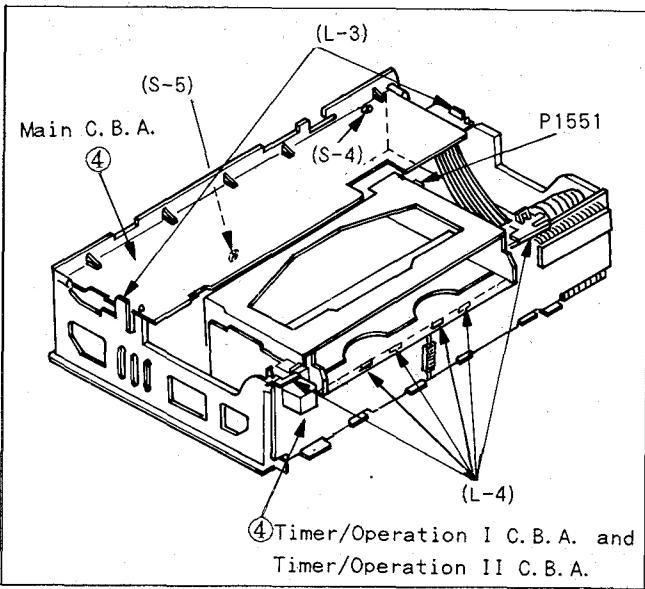


Fig. D5

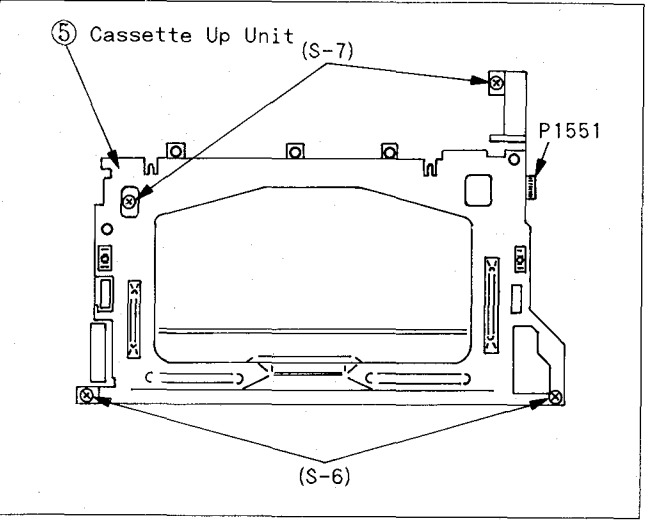


Fig. D6

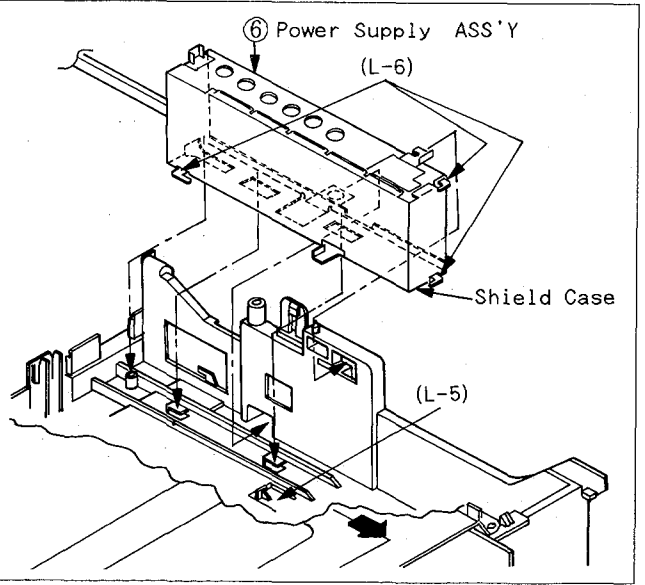
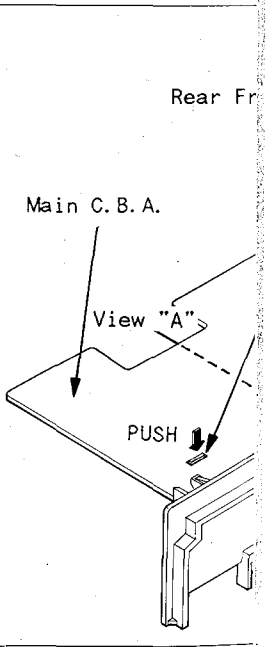
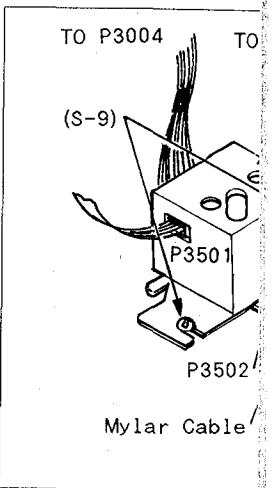
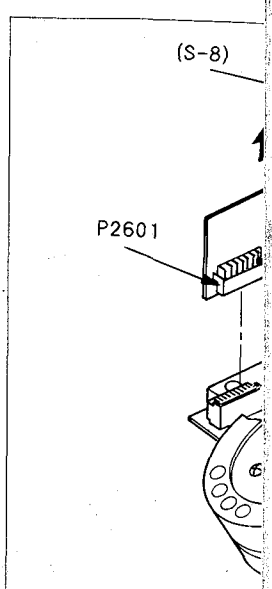


Fig. D7



REMOVAL	
REMOVE *UNLOCK/RELEASE/ UNPLUG/UNCLAMP/ UNSOLDER	Note
2 (S-1), 3 (S-2)	----
2 (S-3)	----
*3 (L-1), *3 (L-2)	1
(S-4), (S-5), *2 (L-3), *6 (L-4)	2
2 (S-6), 2 (S-7), *P1551	3
*P1001, * (L-5)	4
----- *3 (L-6)	5
(S-8), *P2601 *P2602	6
2 (S-9), *P3501, *P3502, *P3004, *P6012	7
*2 (L-7), (S-10), *2 (L-8)	8

(L-1)

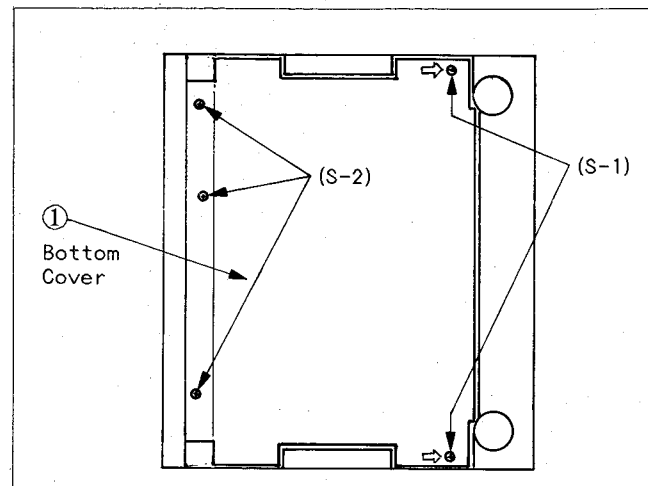


Fig. D2

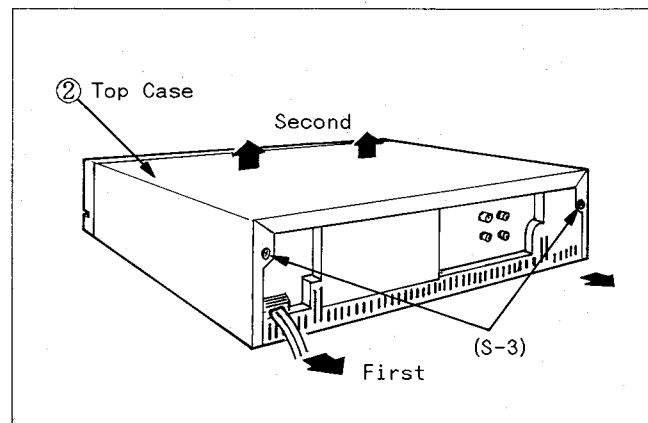


Fig. D3

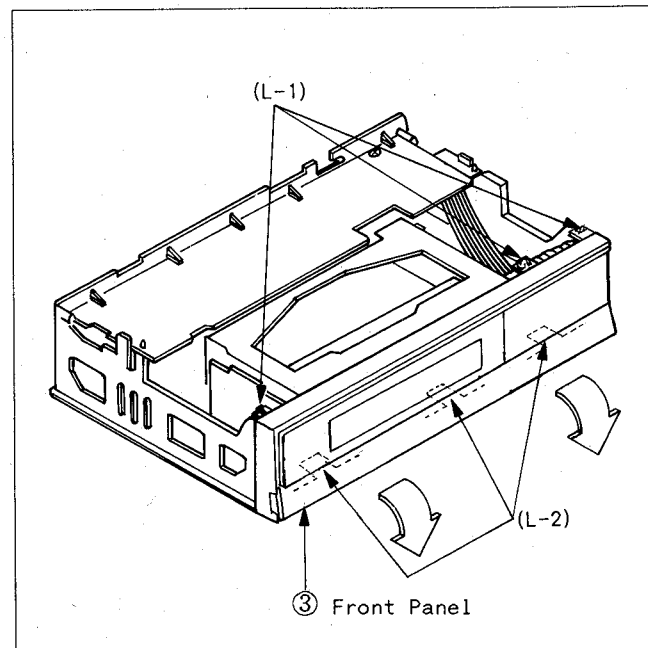


Fig. D4

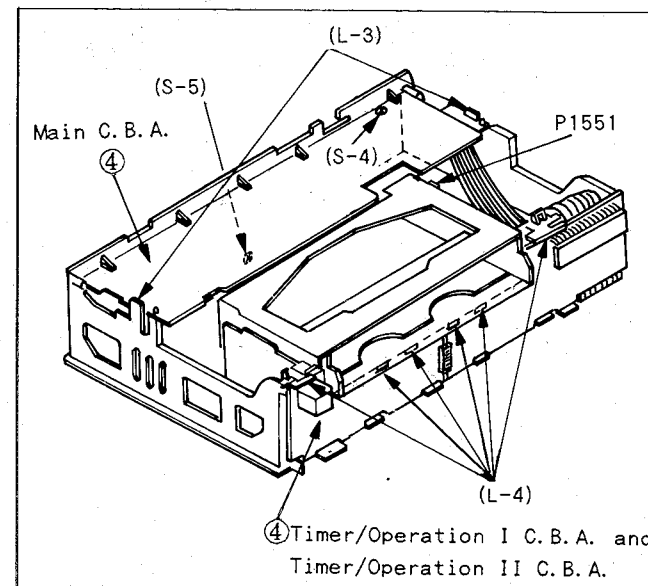


Fig. D5

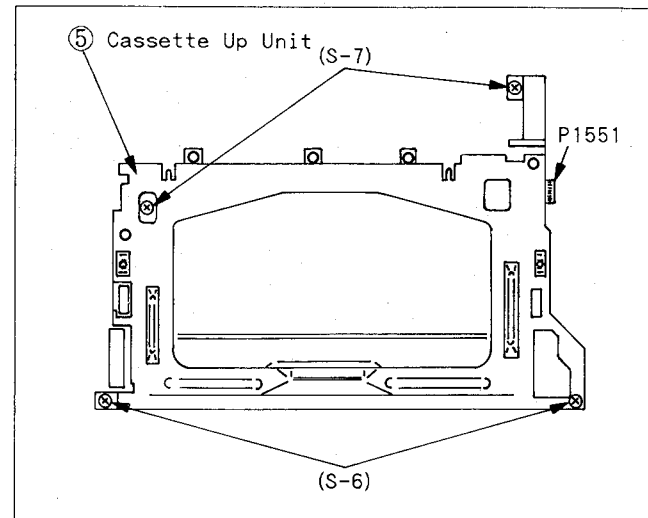


Fig. D6

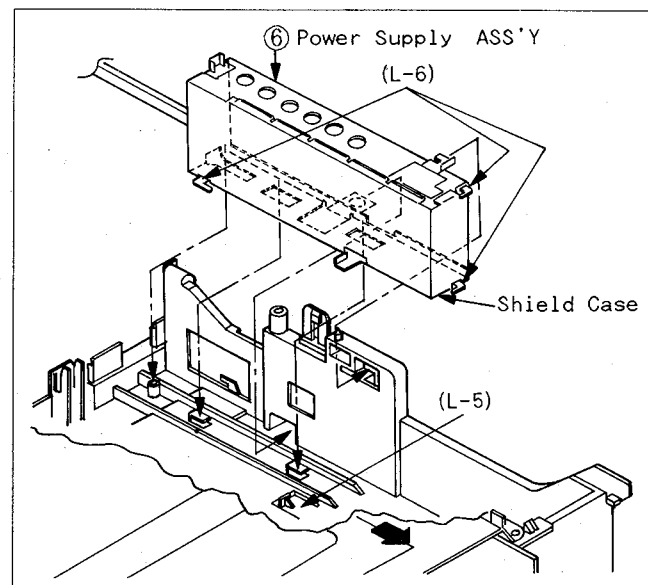


Fig. D7

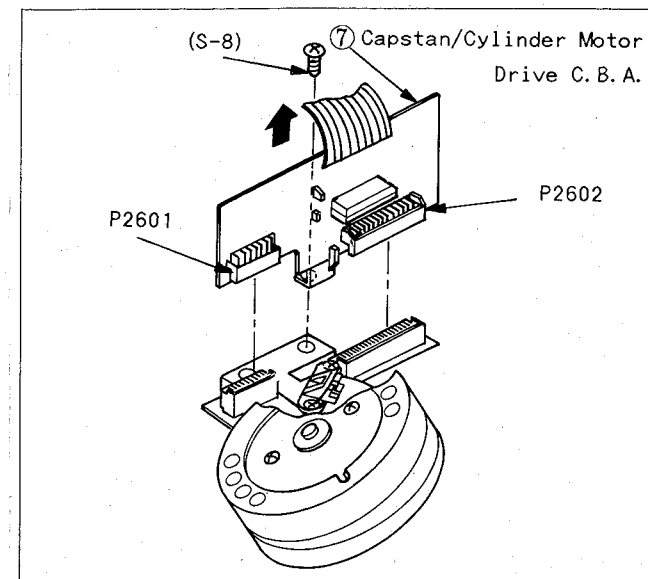


Fig. D8

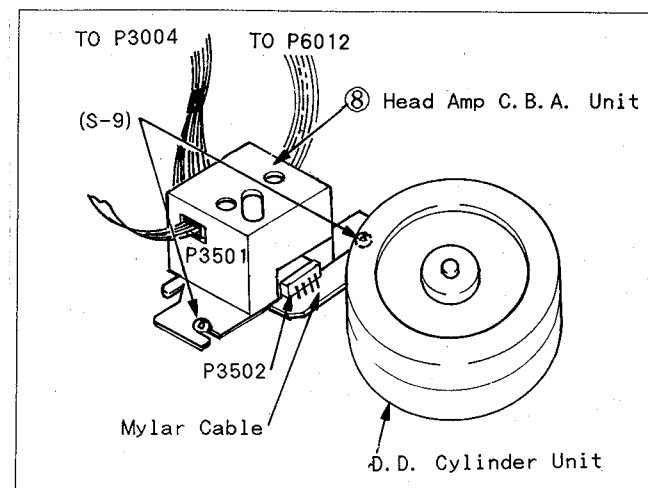


Fig. D9

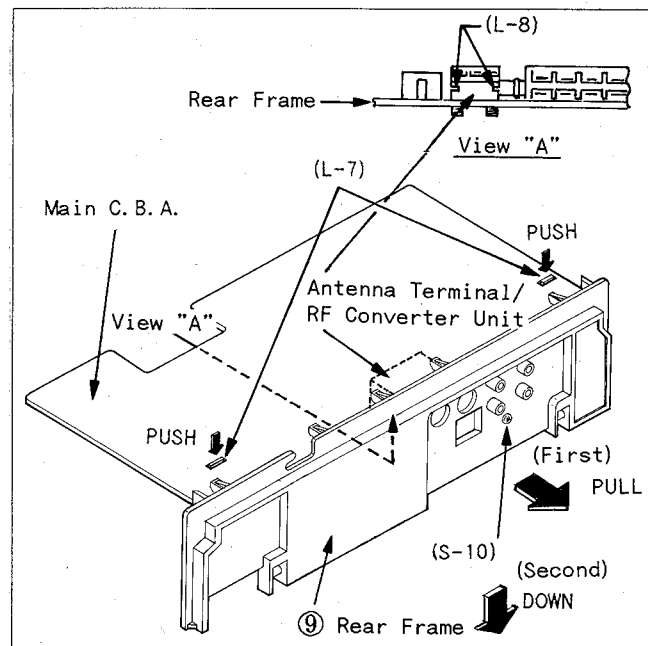


Fig. D10

Reference <Notes> in Table 2 :

- 1) If not already removed, remove 3 Screws (S-2).
- 2) First release 3 Locking Tabs (L-1) on the Top Side, then release 3 Locking Tabs (L-2) on the Bottom Side.
- 3) Reinstall the Front Panel by lifting the Cassette Door Up.
- 4) Work carefully so as not to break the Tabs.
2. 1) Do not forget to remove the Screw (S-5), located on the rear side, as shown in Fig. D5.
- 2) Use care when releasing the Locking Tab on the plastic chassis.
3. If not already opened, open the Main C.B.A. If not already removed, remove the Front Panel Unit.

CAUTION :

When reinstalling the Cassette Up Unit, mechanical adjustment (alignment) should be performed for proper operation. Please refer to adjustment of Cassette Up Unit and Chassis.

4. 1) Push the Power Supply ASS'Y forward in direction of arrow while pushing down on (L-5) to release it. Then, remove the Power Supply ASS'Y by lifting it away from VCR cavity.
- 2) If not already removed, remove one of the (S-1) Screws Located on the Right Rear.
5. When removing the shield case of Power Supply ASS'Y, twist and straighten 3 Locking Tabs (L-6) on the Power Supply ASS'Y in Fig. D7. Then remove the Shield Case by pulling it away from Power Supply ASS'Y.
6. Unplug P2602 first from P1503 on the Capstan Stator ASS'Y. Then use care when unplugging P2601. Hold the Capstan/Cylinder Motor Drive P.C.B. down while unplugging connector P2601 from P1502. IC2602 on the Capstan/Cylinder Motor Drive C.B.A. will be HOT if the Unit has just been in operation.
7. 1) Work carefully so as not to break the Mylar Cable and the connector. Refer to Service Notes and Cautions Item P.
- 2) Ensure the tab on the metal brace is inside of the tapped screw hole in the chassis before replacing the Screws.
8. 1) Use care when releasing the Locking Tab on the Rear Frame.
- 2) Unlock 2 Locking Tabs (L-8) and straighten them.

2. ADJUSTMENT PROCEDURES

1. CONFIRMATION OF GROUNDING PLATE INSTALLATION POSITION

Purpose :
To optimize the position of Grounding Plate.

Symptom of Misadjustment :
May cause Cylinder rotating buzz.

Place the unit left side down. Check to see if the Grounding Plate is properly set in a position just less than 1mm (but not more than 1mm) as measured from the center of the plate to the center of the Cylinder Shaft as shown in Fig. M1. If required, adjust the Grounding Plate position by loosening Black Screw with Washer (A).

Note :
Never install the Grounding Plate in the opposite position (on the front side of the center of the Cylinder Shaft), but always within a maximum of 1mm to the rear side of the center of this shaft.

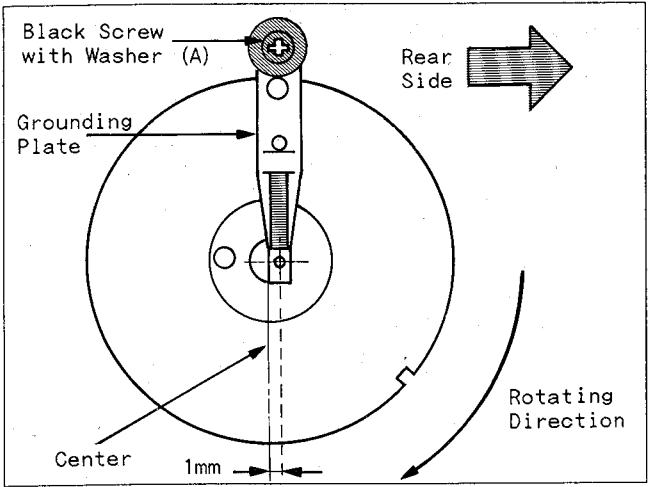


Fig. M1

2. POSITION ADJUSTMENT OF TENSION POST

Purpose :
To feed a constant tension to the tape so that tape runs with stability, by performing a preliminary adjustment.

Symptom of Misadjustment :

- 1) If the adjusted value is below the specification, the tape tension is not sufficient, thus causing a tape slack to occur.
- 2) If the adjusted value is above the specification, the tape tension is too high, thus causing tape damage to occur.

- * Equipment Required:**
2mm Hex. Wrench (Purchase Locally)
1. Remove the Top Case and Front Panel Unit.
 2. Place the unit in the cassette down condition using Method 2 of SERVICE INFORMATION Item View L.
 3. Connect TP6001 and GND on the System Control Section of Main C.B.A. through a jumper wire.
 4. Push the play button to complete loading operation sequence.
 5. As soon as loading is completed, disconnect the AC plug.
 6. Insert the Hex. Wrench (2mm) into the nut on the Tension Band Fastener and adjust it (only counterclockwise) as indicated by the arrow so that the outside edge of the Tension Post lines up with the outside of the P1 Post as shown in Fig. M2 (as viewed looking down the edge of the Cassette Side Plate (L) Unit).
 7. Remove the Hex. Wrench (2mm), and the jumper (TP6001-GND), plug in AC Cord, then complete unloading operation sequence.

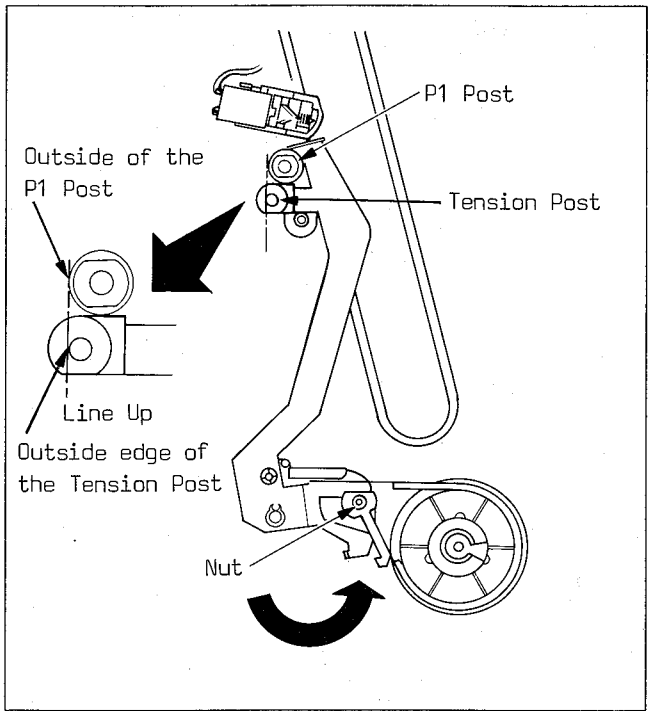


Fig. M2

3. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

Purpose :
To fine adjust the Back Tension so that the tape runs stable with a constant tension.

Symptom of Misadjustment :

- 1) If the tape tension is less than the specified value, the tape can not come into proper contact with the Video Heads, resulting in poor picture playback.
- 2) If the tape tension is too high, the tape will soon be damaged.

A : Measurement Procedure

*** Equipment Required :**
Back Tension Meter (Made in U.S.A., Purchase Locally)
VHS Cassette Tape (120 Minute Tape)

*** Specification : 23 - 27g**

1. Remove the Top Case.
2. Play back a cassette tape from its beginning for approx. 10 to 20 seconds, until the tape's movement has stabilized.
3. Insert Tension Meter in tape path and confirm reading.
4. If the reading is out of specification, perform the adjustment procedure.

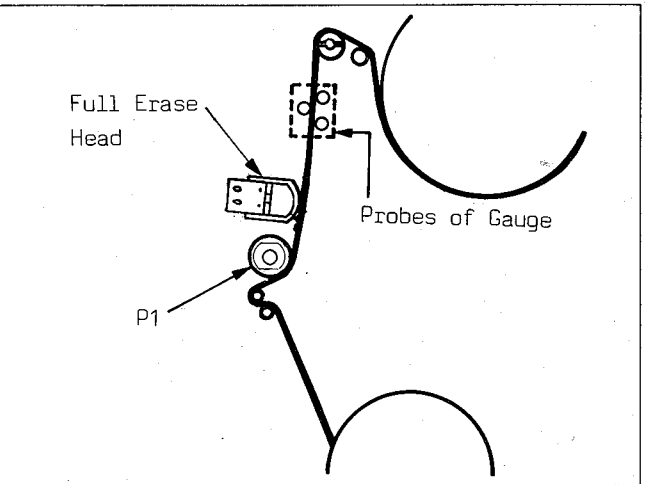


Fig. M3

Note :

1. Make sure that the three probes of the meter are all in solid contact with tape, but out of contact with any other parts while measuring.
2. It is recommended that measurements be taken three times because the tension meter is very sensitive to external vibrations.

B : Adjustment Procedure

1. Remove the cassette tape. Then re-position Tension Spring on the Tension Arm Base Teeth in either direction as indicated by the arrow to obtain the specified tension.
2. Re-position Tension Spring toward front side to increase tension, toward rear side to decrease tension.
3. Reinstall a cassette tape and verify tension with the meter once again.
4. Reinstall the Top Case.

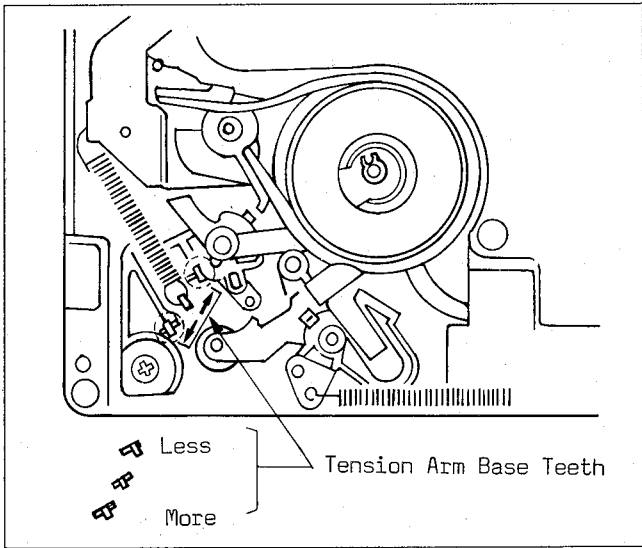


Fig. M4

4. HEIGHT ADJUSTMENT OF REEL TABLES

Purpose :
To properly align the height of the tape wound on the Supply and Take-Up Reels.

Symptom of Misadjustment :
If the height of the tape is not properly aligned, the tape will eventually be damaged.

*** Equipment Required :**
Post Adjustment Plate
Reel Table Height Fixture

*** Specification :**

1. Remove the Top Case, Up Unit.
2. Place the Post Adjuster and put the fixture zero "0" and ensure fixture touches the cut

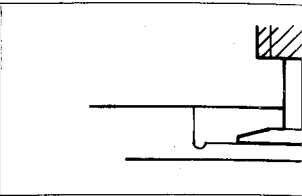


Fig.

3. Then measure the top and compare the difference of the measurement to Do the same for the

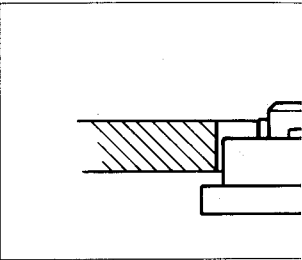


Fig.

4. If the difference is (higher or lower), adjust the height to obtain the specified value.
5. For adjustment, change the height under the reel table in only one size of adjustment.
6. Reinstall the Cassette parts.

5. CONFIRMATION OF TAKE-UP REEL INSTALLATION POSITION

Purpose :
To properly set the Take-Up Reel position.

Symptom of Misadjustment :
The tape will be damaged.

1. Remove the Top Case, Cover.

(Purchase Locally)

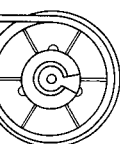
ent Panel Unit.
ette down condition
NFORMATION Item

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) into the nut on
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e Tension Post lines
P1 Post as shown in
down the edge of the
t).
, and the jumper
rd, then complete
e.

P1 Post

Tension Post



3. MEASUREMENT AND ADJUSTMENT OF BACK TENSION

Purpose :

To fine adjust the Back Tension so that the tape runs stable with a constant tension.

Symptom of Misadjustment :

- 1) If the tape tension is less than the specified value, the tape can not come into proper contact with the Video Heads, resulting in poor picture playback.
- 2) If the tape tension is too high, the tape will soon be damaged.

A : Measurement Procedure

* Equipment Required :

Back Tension Meter (Made in U.S.A., Purchase Locally)

VHS Cassette Tape (120 Minute Tape)

* Specification : 23 - 27g

1. Remove the Top Case.
2. Play back a cassette tape from its beginning for approx. 10 to 20 seconds, until the tape's movement has stabilized.
3. Insert Tension Meter in tape path and confirm reading.
4. If the reading is out of specification, perform the adjustment procedure.

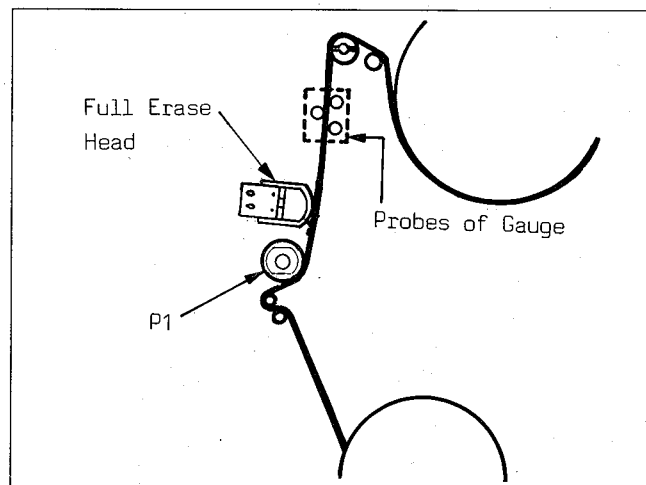


Fig. M3

Note :

1. Make sure that the three probes of the meter are all in solid contact with tape, but out of contact with any other parts while measuring.
2. It is recommended that measurements be taken three times because the tension meter is very sensitive to external vibrations.

B : Adjustment Procedure

1. Remove the cassette tape. Then re-position Tension Spring on the Tension Arm Base Teeth in either direction as indicated by the arrow to obtain the specified tension.
2. Re-position Tension Spring toward front side to increase tension, toward rear side to decrease tension.
3. Reinstall a cassette tape and verify tension with the meter once again.
4. Reinstall the Top Case.

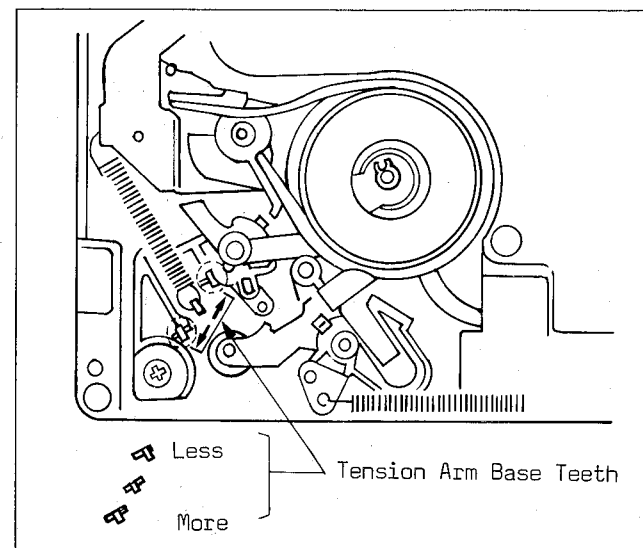


Fig. M4

4. HEIGHT ADJUSTMENT OF REEL TABLES

Purpose :

To properly align the height of the tape wound on the Supply and Take-Up Reels.

Symptom of Misadjustment :

If the height of the tape is not properly aligned, the tape will eventually be damaged.

* Equipment Required :

Post Adjustment Plate (VFKS0010)
Reel Table Height Fixture (VFKS0009)

* Specification $0 \pm 0.1\text{mm}$

1. Remove the Top Case, Front Panel and Cassette Up Unit.
2. Place the Post Adjustment Plate over the reels, and put the fixture on it. Set the fixture to zero "0" and ensure that the foot of the fixture touches the cut-out portion of the plate.

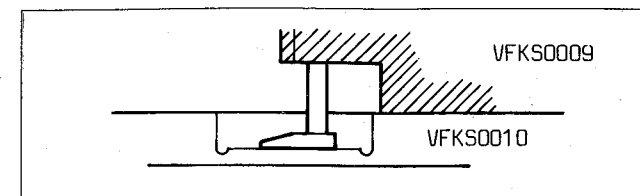


Fig. M5-1

3. Then measure the top portion of the Reel Table and compare the difference against the result of the measurement taken in the above step. Do the same for the other reel table.

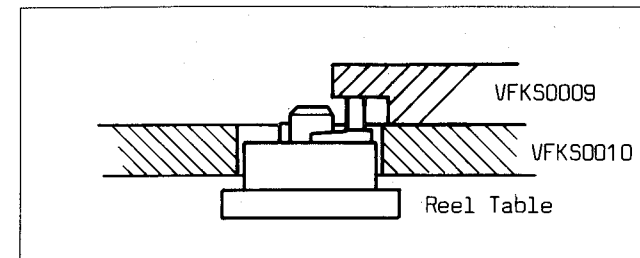


Fig. M5-2

4. If the difference is more than 0.1mm (higher or lower), adjust the height of reel table to obtain the specified height.
5. For adjustment, change the poly washer located under the reel table. (The washer is available in only one size of 0.13mm thick)
6. Reinstall the Cassette Up Unit and the cabinet parts.

5. CONFIRMATION OF TAKEUP SHAFT HOLDER ASS'Y INSTALLATION POSITION

Purpose :

To properly set the Takeup Shaft Holder ASS'Y position.

Symptom of Misadjustment :

The tape will be damaged.

1. Remove the Top Case, Front Panel and Bottom Cover.

2. Place the unit in the cassette down condition using Method 2 of Service Notes and Cautions Item View L. Turn Center Pulley Unit clockwise until post 2 and 3 are partially loaded (Refer to Service Notes and Cautions Item View K).

3. Check to see if the Takeup Shaft Holder ASS'Y is properly set in a position just less than or equal to 0.2mm as measured from the right side to the center of the Shaft Holder Plate as shown in Fig. M6. If required, adjust the Takeup Shaft Holder ASS'Y position by loosening Black Screw with Washer (A).

Note :

Never install the Takeup Shaft Holder ASS'Y in the opposite position (on the left side of the center of the Shaft Holder Plate), but always within a maximum of 0.2mm to the right side of the center of this plate.

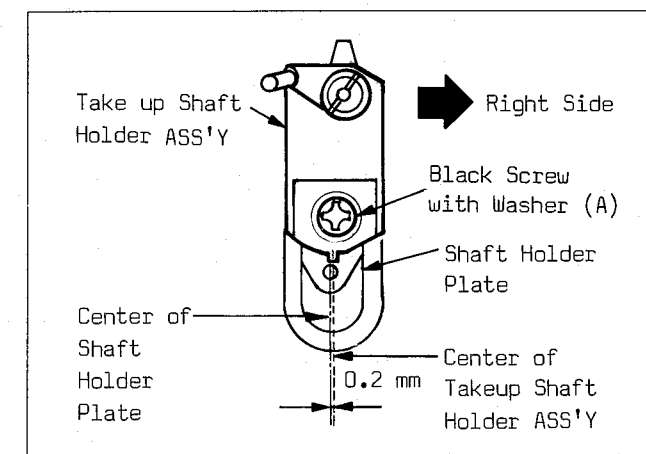


Fig. M6

6. HEIGHT ADJUSTMENT OF TAPE GUIDE POSTS (PRELIMINARY ADJUSTMENT)

* Equipment Required :

Lock Screw Wrench (VFKS0032)
Post Adjustment Plate (VFKS0010)
Reel Table Height Fixture (VFKS0009)
Post Adjustment Screwdriver (VFK0329)

6-A. HEIGHT ADJUSTMENT OF P2 AND P3

Purpose :

To properly align the position of the tape with the Cylinder Lead so that the tape runs with stability.

Symptom of Misadjustment :

- 1) Since the Envelope Waveform Signal cannot be tracked properly, the Playback picture will be poor.

- 2) Since the tape will not run stable, the tape will eventually be damaged.
- 3) Tape interchangeability is poor.

1. Remove the Top Case, Front Panel and Cassette Up Unit. Then install the Adjustment Plate.

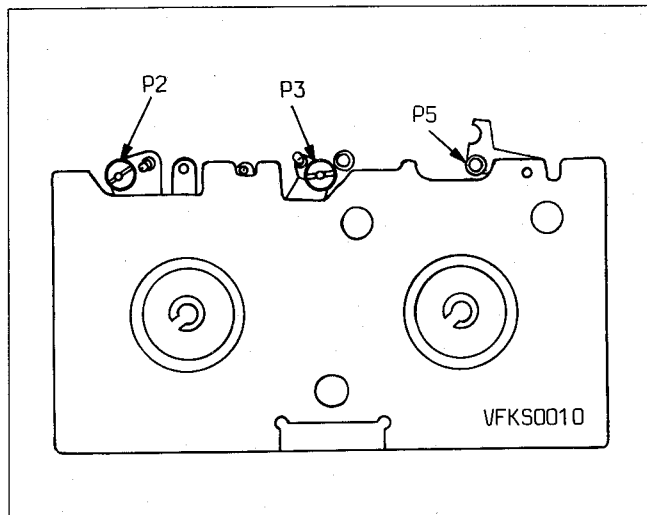


Fig. M7-1

2. First, lower all posts to match the height condition as shown in Fig. M7-2.

(The upper edge of the lower tape guide on each post should be below the bottom of the foot. Loosen Black Lock Screws located at lower portion of posts (P2 & P3) using Lock Screw Wrench, then turn the posts with Post Adjustment Screwdriver.

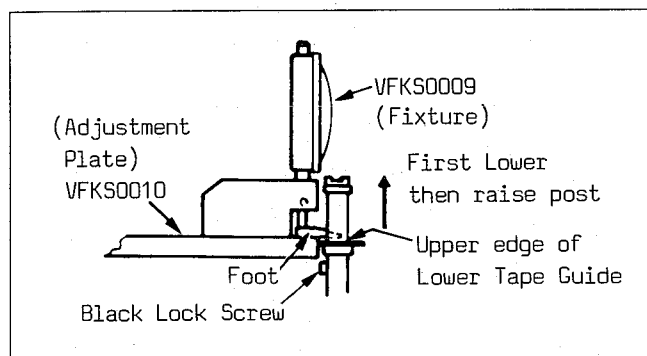


Fig. M7-2

3. Place the fixture on the Adjustment Plate and fit the foot to the Adjustment Plate as shown in Fig. M7-2. (The foot of the fixture should be fully lowered until it touches the plate.)
4. Set the fixture to zero "0" and slowly raise the post until it just touches the foot. When the foot touches the post, it should fit as shown in Fig. M7-3 (b). For adjustment of P2 and P3, use the Post Adjustment Screwdriver.

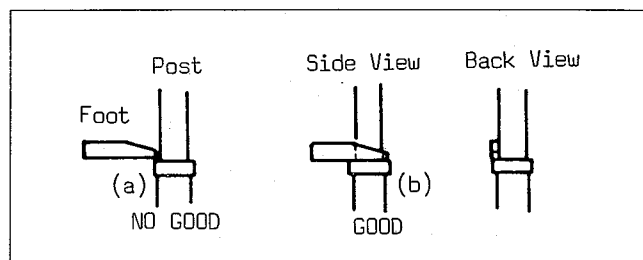


Fig. M7-3

Note :

Upon completion of adjustment, tighten the Black Lock Screws on P2 and P3 using the Lock Screw Wrench.

6-B. HEIGHT ADJUSTMENT OF P5 ARM UNIT

Purpose :

To properly align the Phase and Speed Controls during the CUE/REVIEW Modes and perform the CUE/REVIEW operations without any small additional noise in the picture.

Symptom of Misadjustment :

- 1) Noticeable noise appears in the picture.
- 2) The tape will eventually be damaged.

*** Equipment Required :**

Post Adjustment Plate (VFKS0010)
Reel Table Height Fixture (VFKS0009)
Nut Driver (5.5mm) Purchase Locally

*** Specification :** 0(+0, -0.08)mm

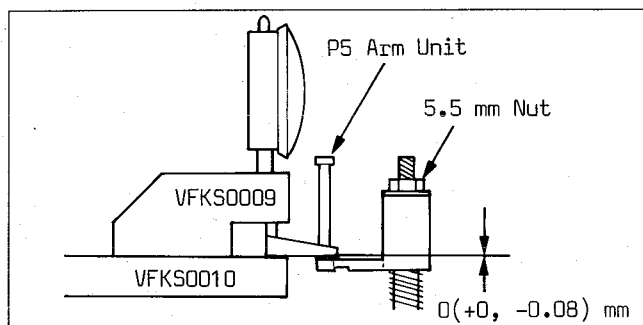


Fig. M7-4

1. Place the Post Adjustment Plate over the Reels, and put the Fixture on it. Set the Fixture to Zero "0" when the foot just touches the Post Height Adjustment Plate.
2. Slightly raise the P5 post above the plate by turning the 5.5mm Nut counterclockwise. Place the foot on the post as shown in Fig. M7-4.
3. Then slowly turn the 5.5mm Nut clockwise until the fixture reads the specified height.

4. Remove the Post Adjustment Plate. Reinstall the Cassette Up Unit, Front Panel and Top Case.

Note :

Upon completion of above procedure, play back the tape and confirm that the tape runs properly without curling between lower and upper limits of P5 Post. Also confirm that the tape is running smoothly.

If adjustment is required, turn the 5.5mm Nut until the curling smoothes out.

7. TAPE INTERCHANGEABILITY ADJUSTMENT (FINAL ADJUSTMENT)

Note :

To perform these adjustment/confirmation procedures, make sure that the Tracking Control is set in the Neutral position.

*** Equipment Required :**

Dual Trace Oscilloscope
VHS Alignment Tape (VFMS0001H6)
Post Adjustment Screwdriver (VFK0329)
H-Position Adjustment Fixture (VFKS0003)
Lock Screw Wrench (VFKS0032)
7mm Nut Driver Purchase Locally

7-A. CONFIRMATION OF TAPE TRAVEL

Purpose :

To make sure that the tape run is well stabilized.

Symptom of Misadjustment :

If the tape travels with instability, the tape will be damaged.

1. Play back a cassette tape and confirm that the tape travels without curling at the upper and lower guides on posts P2 and P3.

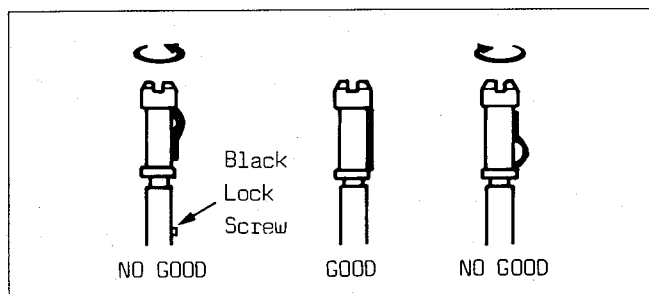


Fig. M8

2. If curling is apparent, adjust the height of posts by turning the top of post with the Post Adjustment Screwdriver. (for P2 & P3)

Note :

Before turning P2 and P3, slightly loosen the Black Lock Screw using the Lock Screw Wrench.

7-B. CONFIRMATION OF A/C HEAD HEIGHT

Purpose :

To make sure the tape runs properly along the Control Head.

Symptom of Misadjustment :

If the control signal is not properly picked up, Servo Operation can not be achieved.

This confirmation is required when the A/C Head is replaced and for a preliminary height adjustment. For final adjustments, perform items 7-C and 7-D.

1. Looking at the lower edge of the Control Head with the tape in motion, ensure that the lower edge of the tape runs 0.25mm above the lower edge of the control head. If it doesn't, turn 7mm Nut (A) slightly in either direction as necessary to correct it. Turn clockwise to lower the head and counterclockwise to raise it.

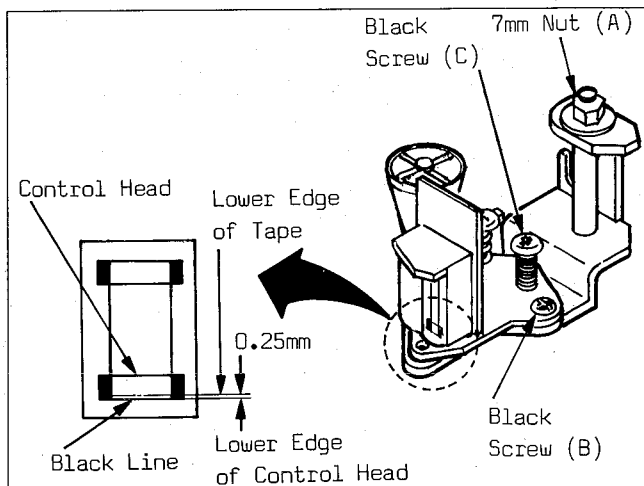


Fig. M9

7-C. CONFIRMATION OF TILT OF A/C HEAD

Purpose :

To confirm that the tape run is well stabilized. In particular, confirm that the tape properly picks up the Audio Signal at the upper part and the Control Signal at the lower part.

Symptom of Misadjustment :

If the tilt of the A/C Head is poorly adjusted, the tape will be eventually damaged.

1. Play back the tape and confirm that the tape runs properly between lower and upper limits of P4 post. Also confirm that the tape is running smoothly.
2. If adjustment is required, turn Black Screw (C), in Fig. M9, clockwise until curling is apparent at lower edge of P4. Then turn Black Screw (C) counterclockwise until the curling smoothes out.

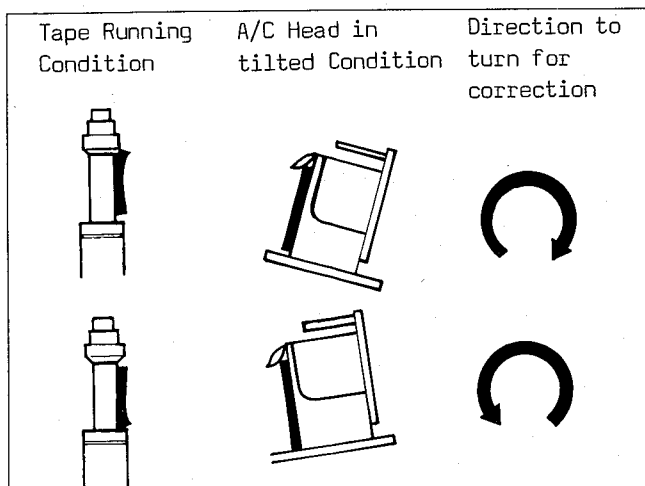


Fig. M10

7-D. HEIGHT AND AZIMUTH ADJUSTMENT OF A/C HEAD

Purpose :

To adjust the position and height of the A/C Head so that it meets the tape tracks properly.

Symptom of Misadjustment :

If the position of the A/C Head is not properly adjusted, the Audio S/N Ratio is also poor.

1. Connect the oscilloscope to the audio output jack on the rear of the deck.
2. Play back the monoscope portion (6kHz, Mono) of the alignment tape (VFMS0001H6).
3. Adjust Black Screw (B) on the head base in Fig. M9 so that the output level is at a maximum.

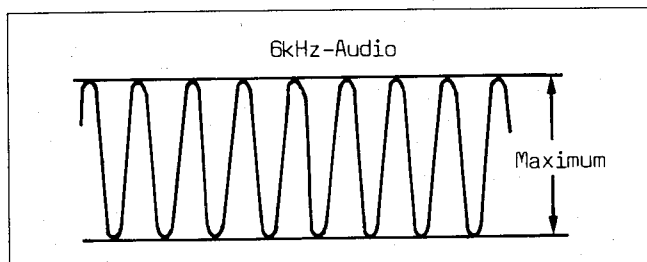


Fig. M11

4. Readjust 7mm Nut (A) shown in Fig. M9 for maximum output.
5. Disconnect the oscilloscope.

7-E. HORIZONTAL POSITION ADJUSTMENT OF A/C HEAD

Purpose :

To adjust the Horizontal Position of the A/C Head.

Symptom of Misadjustment :

If the Horizontal Position of the A/C Head is not properly adjusted, maximum envelope can not be obtained at the Neutral Position of the Tracking Control Circuit.

1. Set tracking control to the Neutral position. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the Main C.B.A. Use TP6015 as a trigger.
2. Play back the monoscope portion of the alignment tape (VFMS0001H6) and confirm that the RF envelope appears, as in Fig. M13-1.
3. If adjustment is required, set the H-Position ADJ. Fixture into the slot of the Adjustment Nut and slowly turn either right or left so that the envelope is at a maximum.
4. Before finding the center of the maximum period of the envelope, rotate the adjustment nut back and forth slightly to confirm the limits on either side of the maximum period.
5. Push the Tracking Control UP Button (on the IR Transmitter) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
6. Re-set the tracking control to the neutral position by ejecting the tape and reinserting it. Push the Tracking Control DOWN Button (on the IR Transmitter) several times (count the number of times pushed) until the maximum envelope is reduced to 1/2.
7. If the number of pushes is not the same, then rotate the adjustment nut back and forth slightly to find the center point. Then repeat the above procedure until the center point is determined.

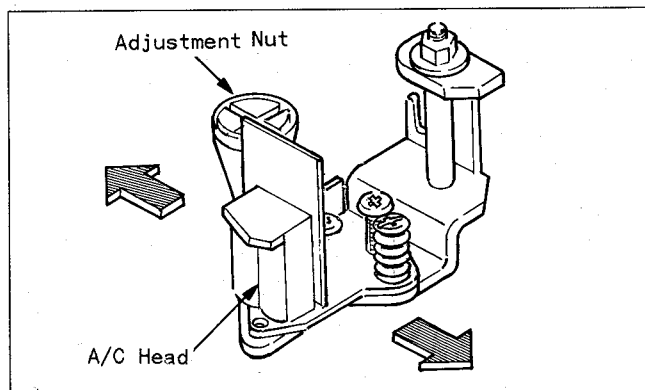


Fig. M12

7-F. CONFIRMATION/ADJUSTMENT OF ENVELOPE OUTPUT

Purpose :

To achieve a satisfactory picture and secure precise tracking.

Symptom of Misadjustment :

If the envelope is output poorly, much noise will appear in the picture. Then the tracking will lose precision and the playback picture will be distorted by any slight variation of the tracking control.

1. Set tracking control to the Neutral position. Connect the oscilloscope to TP3002 on the Video Signal Process Section of the Main C.B.A. Use TP6015 as a trigger.
2. Play back the monoscope portion of the alignment tape (VFMS0001H6) and adjust the height of posts P2 and P3 watching the scope display so that the envelope becomes as flat as possible.
($V1/V_{\max} \geq 0.7$, $V2/V_{\max} \geq 0.8$)

If adjustment is required, turn top of post with Post Adjustment Screwdriver. For adjustment of P2 and P3, refer to Item 7-A and it's Note.

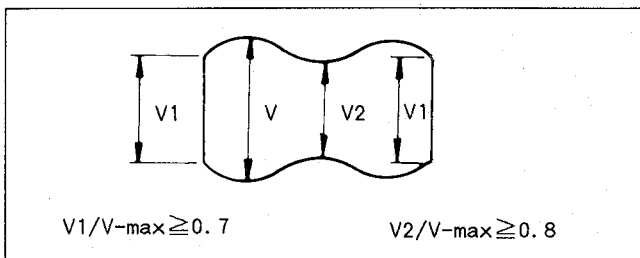


Fig. M13-1

3. When the scope display is as shown in Fig. M13-2, adjust the height of P2 so that the waveform looks like Fig. M13-4.

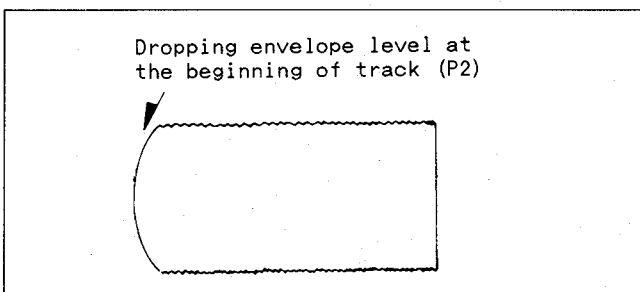


Fig. M13-2

4. When the scope display is as shown in Fig. M13-3, adjust the height of P3 so that the waveform looks like Fig. M13-4.

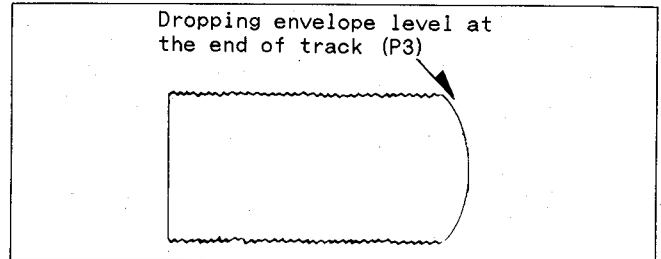


Fig. M13-3

5. When P2 and P3 are adjusted properly, there is no Envelope Drop at the beginning or end of the track as shown in Fig. M13-4.

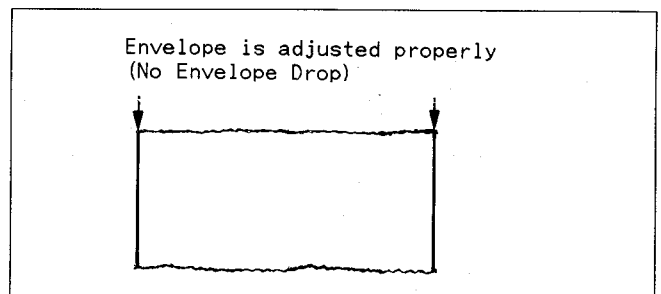


Fig. M13-4

Note :

Upon completion of adjustment of P2 and P3, tighten the Black Lock Screws on P2 and P3 using the Lock Screw Wrench. Then confirm the Horizontal Position of A/C Head by pushing the Tracking Control Up or Down Buttons alternately, using the IR Wireless Transmitter Unit, to check the symmetry of the envelope. And if required, perform "Horizontal Position Adjustment of A/C Head".

8. ADJUSTMENT OF FG HEAD GAP

Purpose :

To properly pick up the FG Signal.

Symptom of Misadjustment :

If the FG Signal is not properly picked up, Servo Operation can not be achieved.

* Equipment Required :

Oscilloscope
Fine Adjustment Screwdriver (VFK0330)

* Specification:

0.1 - 0.13 mm

1. Place the unit upside down.
2. Slightly loosen 2 Black Screws (A) and set the Fine Adjustment Screwdriver into Hole (B) as shown in Fig. M14. Turn screwdriver clockwise until the FG Head touches the rotor. Then turn it slightly counterclockwise to the clearance as specified.
3. Tighten 2 Black Screws (A) in Fig. M14.

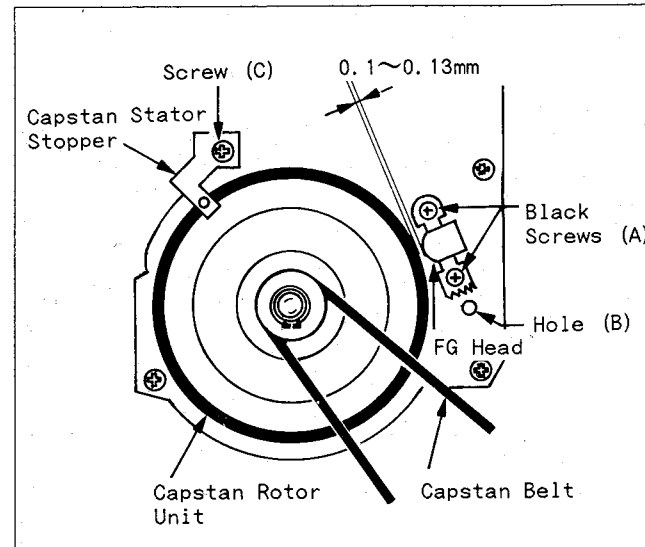


Fig. M14

Note :

1. Do not touch the outside circumference of the rotor surface with any tool and keep magnetic material away from the rotor magnet (especially metal particles).
2. Upon completion of above procedure, confirm that the FG Head output level is more than 10mVp-p, see preparation below. If the level is not more than 10mVp-p, re-adjust the FG Head Gap so that the FG Head output level is more than 10mVp-p.

(Preparation)

- 1) Supply a Video Signal to the Video Input Jack on the rear of the deck.
- 2) Insert a cassette tape and place the unit in SLP recording Mode.
- 3) Connect the oscilloscope to the terminals of the FG Head.

9. REPLACEMENT OF CAPSTAN ROTOR OR STATOR UNIT

1. Remove the Capstan Belt (Fig. M14).
2. Remove Screw (C) and the Capstan Stator Stopper in Fig. M14.
3. Carefully pull out the Capstan Rotor Unit, taking care so as not to lose the 2 Dust Seals as shown in Fig. M15.

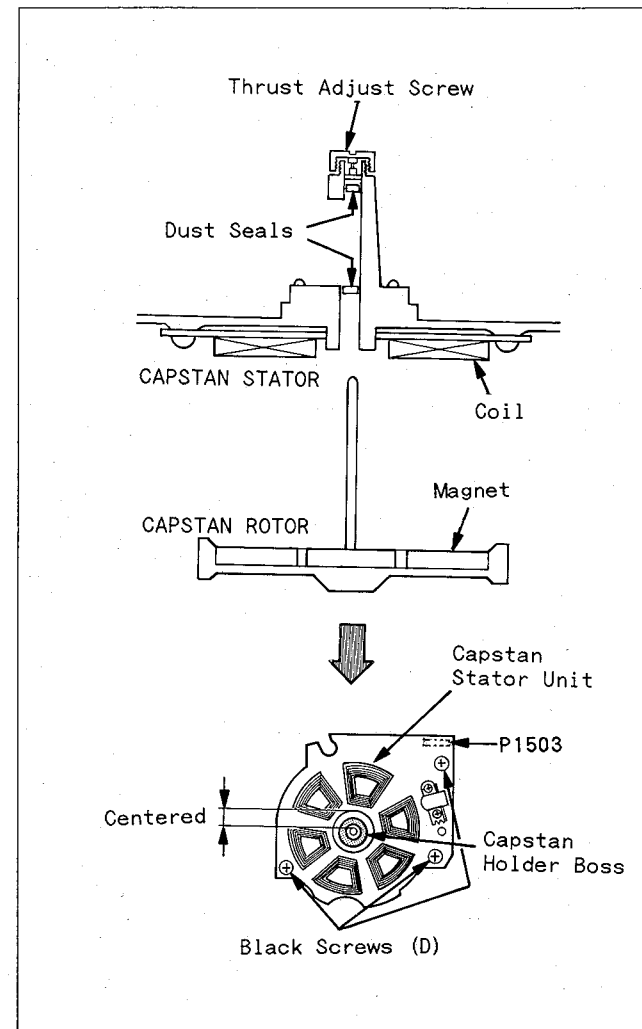


Fig. M15

4. Unplug Connector P1503 on the Capstan Stator Unit. Remove 3 Black Screws (D) and then lift the Capstan Stator Unit.
5. Replace the new Capstan Stator Unit and then tighten 3 Black Screws (D). Plug Connector P1503 on the Capstan Stator Unit.

Note :

When reinstalling the Capstan Stator Unit, the Capstan Holder Boss must be centered within the hole in the Capstan Stator Unit.

6. Before replacement of new Capstan Rotor Unit, loosen the Thrust Adjust Screw completely.
7. Replace the new Capstan Rotor, carefully inserting the 2 Dust Seals as shown in Fig. M15.

Note :

- 1) The Capstan Rotor Unit is supplied as a replacement part in a complete unit with a spring loaded Capstan Pulley. Do not remove the Retaining Ring on the Capstan Pulley of the Capstan Rotor Unit.
- 2) Hold the new Capstan Rotor Unit firmly, when replacing it, so the rotor will not be pulled toward the stator too quickly (due to magnetic force). Placing some paper on the coils before rotor installation may prevent accidental damage to the coils if the above caution is not observed.
- 3) During replacement, do not touch the Capstan Shaft with any hard material like drivers or tweezers.

8. Re-install the Capstan Stator Stopper with Screw (C), in Fig. M14.

--- ADJUSTMENT OF THRUST ADJUST SCREW AND DUST SEALS ---

9. Re-install the Capstan Belt and while exerting pressure to turn the Center Pulley Unit, tighten the Thrust Adjust Screw slowly until the Capstan Rotor just starts turning.
10. At the point where the Capstan Rotor starts turning, tighten the Thrust Adjust Screw another 180° CW.
11. Upon completion of above procedure, confirm that these 2 Dust Seals are positioned as shown in Fig. M16. And then, wipe off the Capstan Shaft to remove oil, grease and dust.

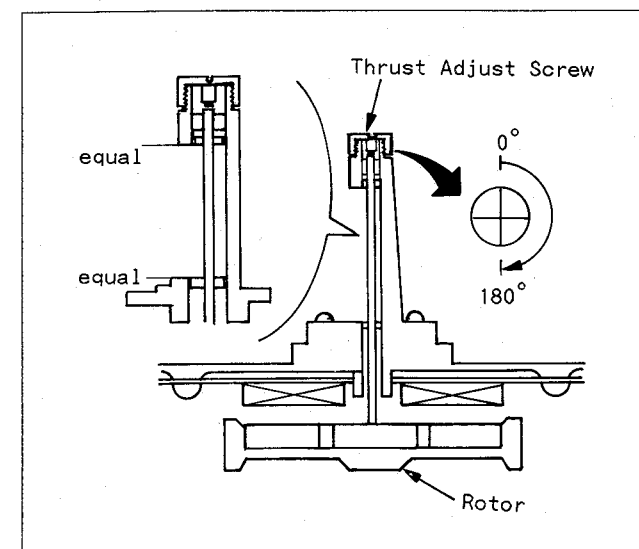


Fig. M16

10. DISASSEMBLY/ASSEMBLY PROCEDURES OF MECHANISM

This procedure starts with the condition that the cabinet parts, Timer/Operation I, II C.B.A.s, Main C.B.A., Head Amp C.B.A. Unit and Capstan/Cylinder Motor Drive C.B.A. have been removed. Also, all the following procedures for adjustment and part replacement should be performed in Stop Mode. When reassembling, perform the step(s) in the reserve order.

STEP /LOC. No.	START -ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE *UNHOOK/UNLOCK /RELEASE/UNPLUG/UNSOLDER	ADJUSTMENT #CONDITION
①	1	PRESSURE CAM CAP	T	DM1 DM4	*(L-1)	-----
②	1	PRESSURE ROLLER ARM UNIT	T	DM1 DM4	-----	(+) <Note 1>
③	2	PRESSURE ROLLER LIFT CAM	T	DM1 DM4	-----	See, Alignment Procedures for Mechanism Item 11-8
④	3	PRESSURE REDUCTION GEAR	T	DM1 DM4	-----	(+) See, Alignment Procedures for Mechanism Item 11-2
⑤	5	LINK GEAR	T	DM1 DM4	(C-1) <Note 2>	(+) See, Alignment Procedures for Mechanism Item 11-6
⑥	6	MAIN BRAKE ASS'Y	T	DM1 DM5	2 (C-2), *2 (P-1), * (P-2) <Note 2>	(+) See, Setting Condition in Fig. DM5
⑦	6	TENSION BAND ASS'Y	T	DM1 DM6	*(P-3), *(L-2), (R-1)	(+) See, Position Adjustment of Tension Post
⑧	2	P5 SECTOR GEAR	T	DM1 DM7	*(L-3)	See, Alignment Procedures for Mechanism Item 11-7
⑨	8	P5 ARM UNIT	T	DM1 DM7	(N-1), (W-1), *(P-4)	(+) STOP <Note 3> See, Height Adjustment of P5 Arm Unit
⑩	10	TAKEUP REEL TABLE	T	DM1	(R-2)	(+) <Note 5> See, Height Adjustment of Reel Tables
⑪	7	SUPPLY REEL TABLE	T	DM1	(R-3)	
⑫	12	CAM FOLLOWER ARM UNIT	B	DM2	(R-4)	<Note 4>
⑬	12	MAIN/SUB LEVER ASS'Y	B	DM2 DM8	2 (C-3) <Note 2>	See, Setting Condition in Fig. DM8
⑭	13	CENTER PULLEY ASS'Y	B	DM2 DM9	(C-4) Capstan Belt <Note 2>	(+) See, Fig. DM9
⑮	14	CLUTCH DISK ASS'Y	B	DM2 DM10	(C-5) <Note 2>	See, Alignment Procedures for Mechanism Item 11-4
⑯	16	SPAN LIMITER	B	DM2 DM10	(S-1), 3 (R-5), (W-2) Capstan Belt	-----
⑰	16	SUN GEAR	B	DM2 DM10	-----	(+) See, Alignment Procedures for Mechanism Item 11-4
⑱	17, 12	MAIN CAM GEAR	B	DM2 DM10	(W-3)	(+) See, Alignment Procedures for Mechanism Items 11-2 and 11-3
⑲	18	DETENT ARM	B	DM10	-----	(+) -----
⑳	19	SUB CAM GEAR	B	DM4 DM10	-----	(+) See, Alignment Procedures for Mechanism Item 11-1
㉑	16	RETAINER GEAR ASS'Y	B	DM10	-----	(+) See, Alignment Procedures for Mechanism Item 11-3
㉒	16	SECTOR GEAR UNIT	B	DM2 DM10	-----	(+) See, Alignment Procedures for Mechanism Item 11-5 <Note 6>

STEP /LOC. No.	START -ING No.	PART		REMOVAL		INSTALLATION
				Fig. No.	REMOVE *UNHOOK/UNLOCK /RELEASE/UNPLUG/UNSOLDER	ADJUSTMENT #CONDITION
㉓	22, 17	LOADING CAM GEAR	B	DM10	-----	(+) See, Alignment Procedures for Mechanism Item 11-3 <Note 6>
㉔	21, 20 23,	RING GEAR	B	DM10	-----	(+) See, Alignment Procedures for Mechanism Item 11-1
㉕	20	RELEASE LEVER UNIT	B	DM12	(S-2)	(+) See, Setting Condition in Fig. DM12
㉖	25	INTERMEDIATE GEAR	B	DM13	(L-9), (W-4) <Note 2>	-----
㉗	26	DRIVE DISK	B	DM13	-----	-----
㉘	28	LOADING ARM-S UNIT	B	DM2 DM10	*(L-4)	(+) See, Alignment Procedures for Mechanism Item 11-5
㉙	22, 14	LOADING ARM-T UNIT	B	DM2 DM10	*(L-5)	
㉚	14	SUPPLY REEL GEAR UNIT	B	DM9	*(C-7) <Note 2>	(+) -----
㉛	14	TAKEUP REEL GEAR UNIT	B	DM9	*(C-8) <Note 2>	(+) -----
㉜	14	STOPPER BASE ASS'Y	B	DM11	(S-3)	-----
㉝	32	PLAY ARM UNIT	B	DM13	-----	-----
㉞	33, 24	PLAY SET ARM	B	DM13	*(L-6)	-----
㉟	11	TENSION ARM BASE UNIT	T B	DM1 DM2	(S-4) *(L-7)	(+) See, Position Adjustment of Tension Post
㊱	3	CAPSTAN HOLDER ASS'Y	T	DM1	3 (S-5)	(+) See, Replacement of Capstan Rotor or Stator Unit
㊲	37	MODE SELECT SWITCH ASS'Y	T	DM1	(S-6) *Connections	See, Alignment Procedures for Mechanism Item 11-8
㊳	38	A/C HEAD UNIT	T	DM1 DM3	(N-2), (W-5), *(P-5)	(+) See, Confirmation of A/C Head Height
㊴	38	CHASSIS P.C.B.	T	DM1 DM14	2 (S-7), *P1553 *Connections	-----
㊵	40	SOLENOID UNIT	T	DM1 DM15	(S-8), *(P-6) *Connections	-----
㊶	40	SOLENOID LEVER UNIT	T	DM15	*(L-8)	(+) -----
㊷	41	V STOPPER (L, R)	T	DM1	4 (S-9)	-----
㊸	28, 41	LOADING POST BASE-S UNIT	T	DM1	Slide to rear to remove	(+) -----
㊹	29, 41	LOADING POST BASE-T UNIT	T	DM1	Slide to rear to remove	
㊺	45	D.D CYLINDER UNIT	B	DM2	3 (S-10)	See, Replacement of D.D. Cylinder Unit

List of Abbreviations :

T = Top ; B = Bottom

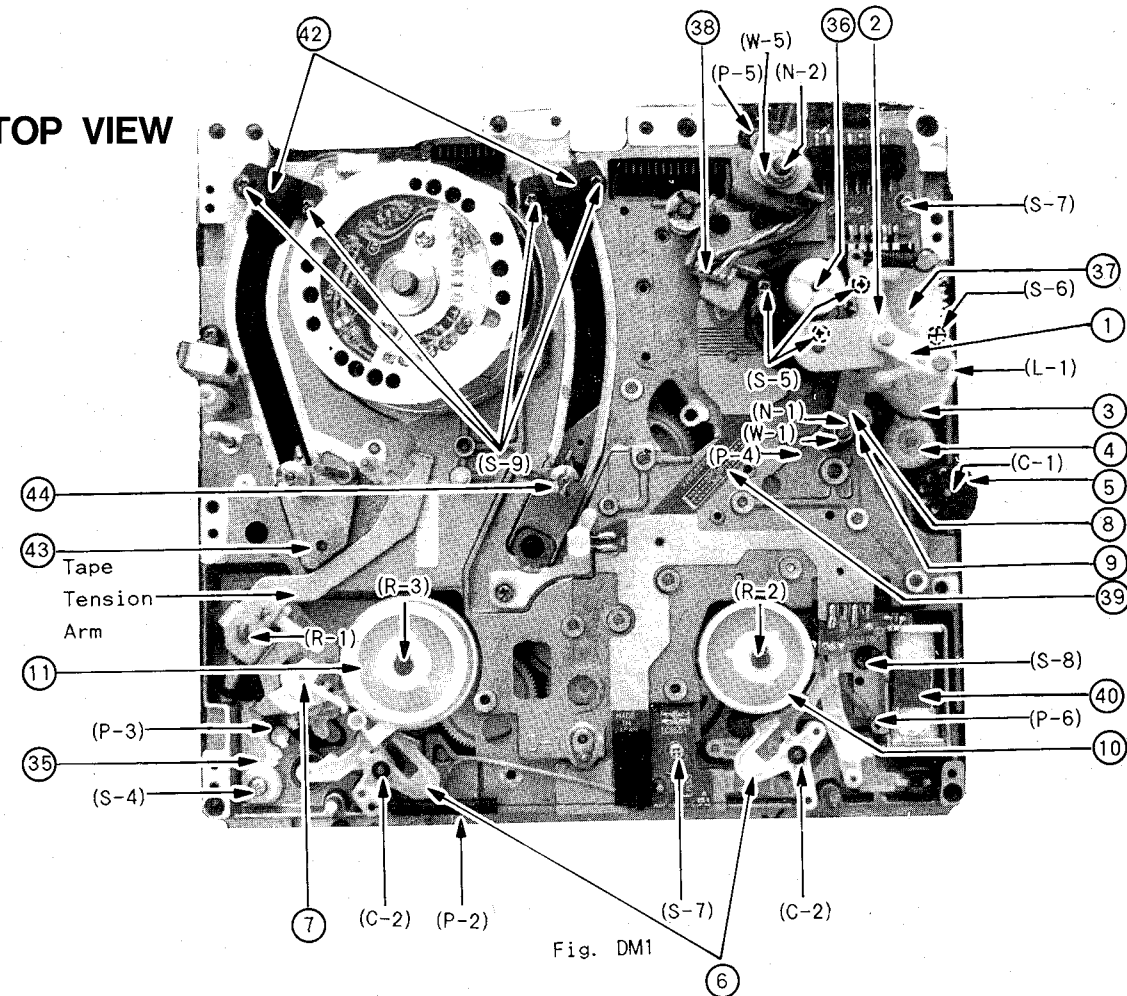
(R-1) = Retaining Ring (R-1); 2 (P-1) = 2 Springs (P-1); (S-1) = Screw (S-1);

(W-1) = Washer (W-1); 3 (S-5) = 3 Screws (S-5); (C-1) = Cut Washer (C-1);

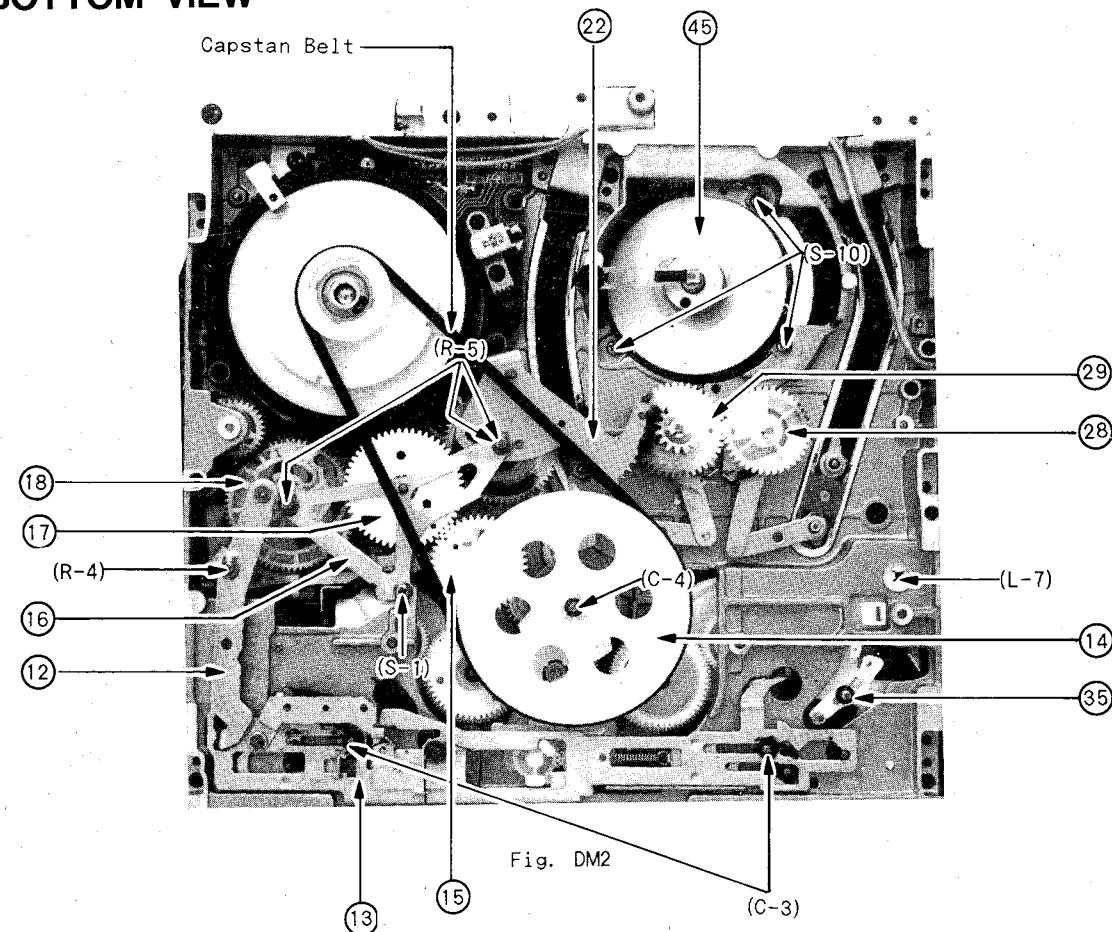
(N-1) = Nut (N-1); (L-1) = Locking Tab (L-1)

(+) : Refer to Exploded Views of Main Service Manual for Lubrication information.

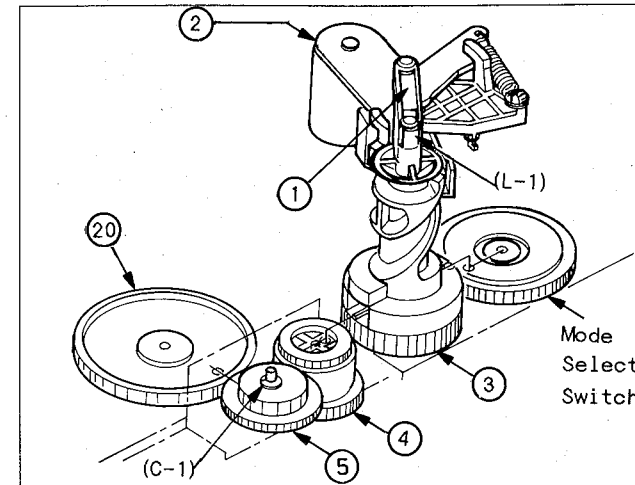
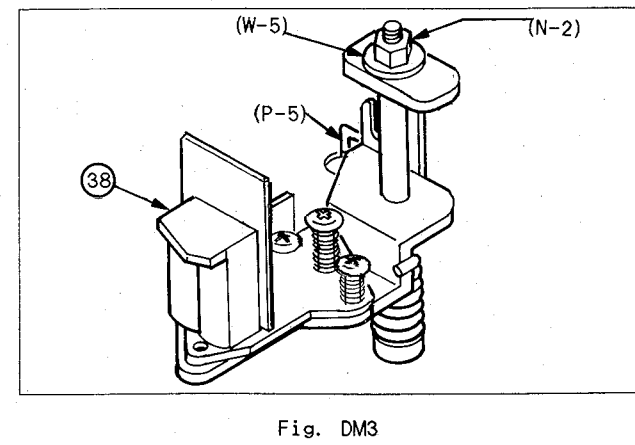
TOP VIEW



BOTTOM VIEW



A/C Head Spring Hooking Position



Main Brake Springs Hooking Position

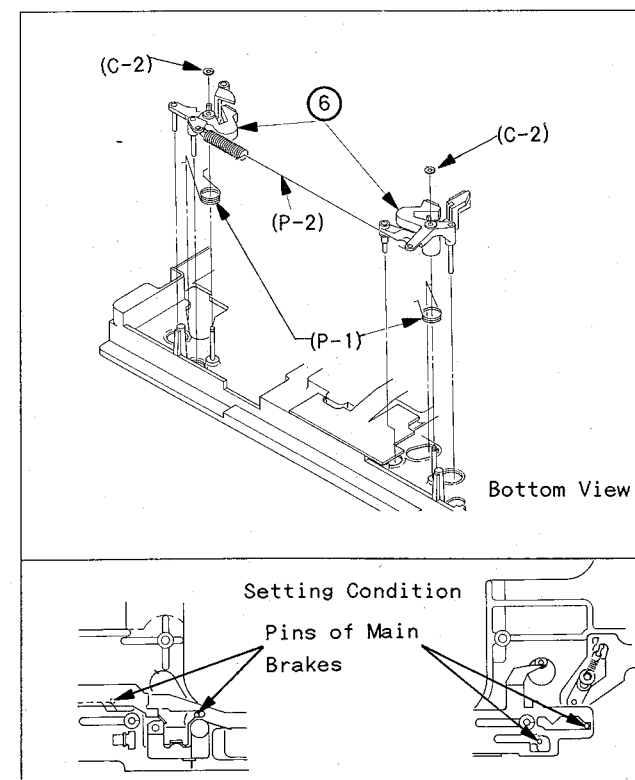


Fig. DM5

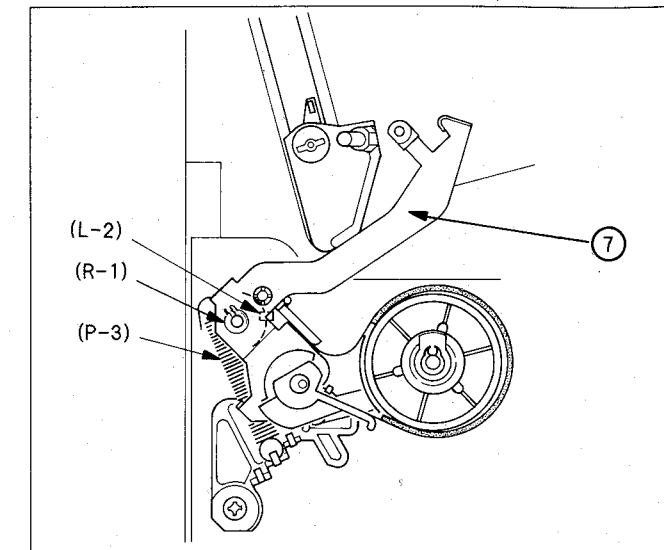


Fig. DM6

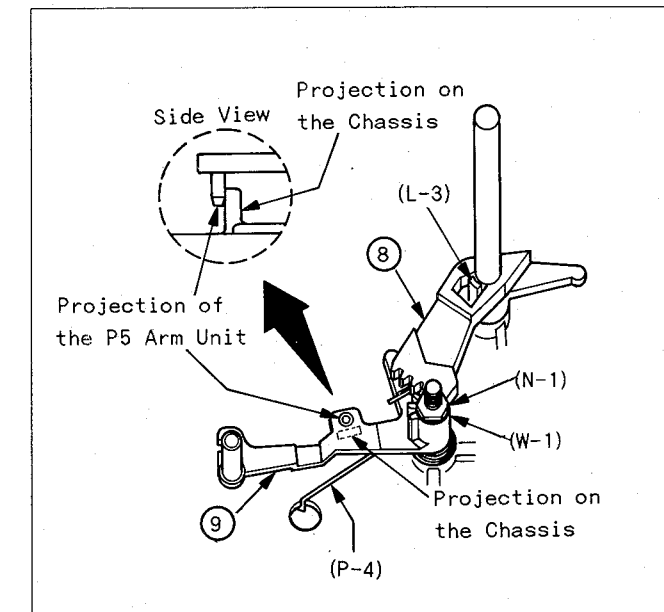


Fig. DM7

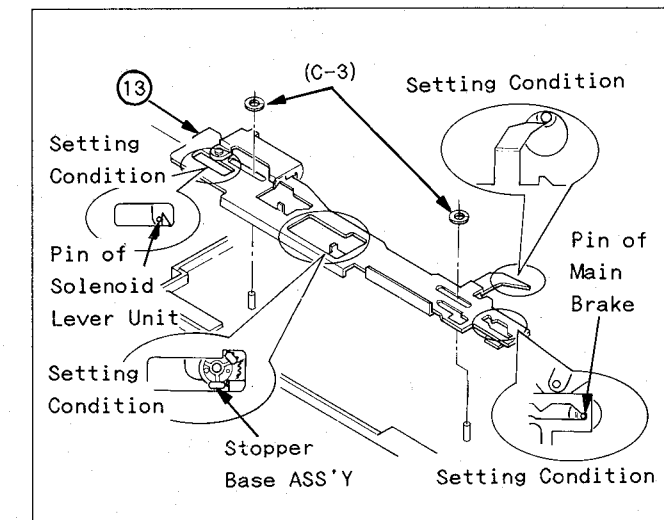


Fig. DM8

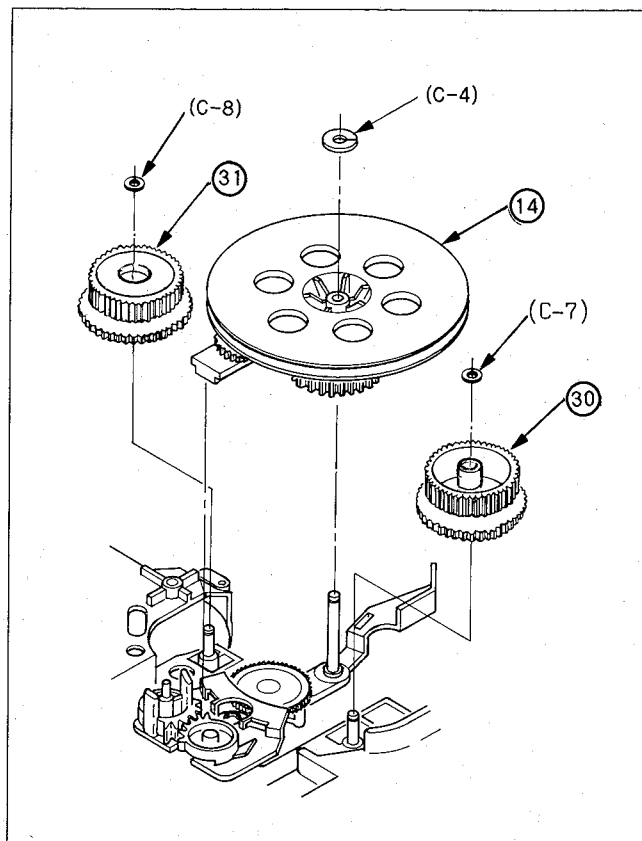


Fig. DM9

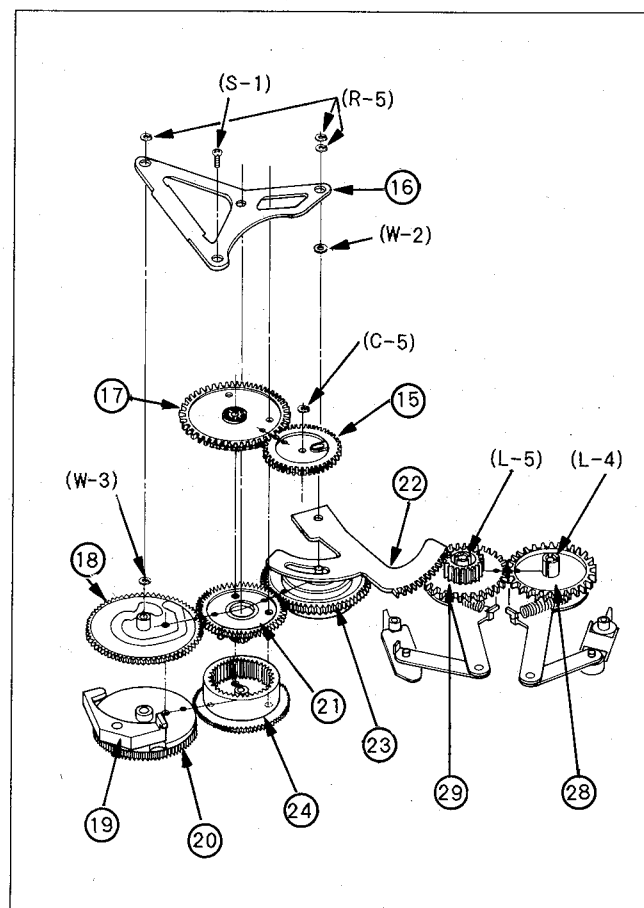


Fig. DM10

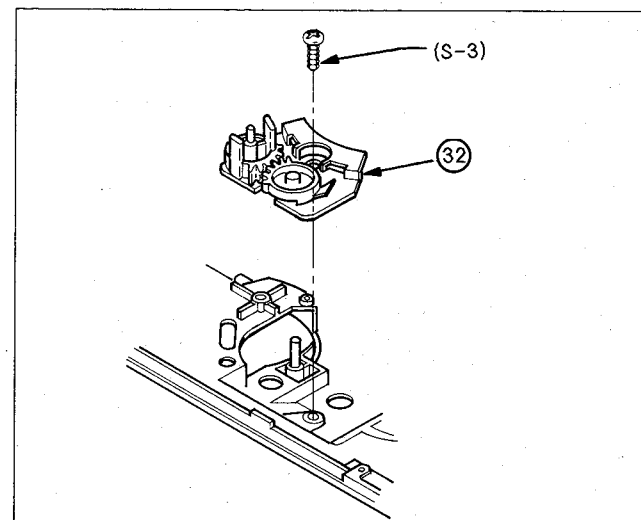


Fig. DM11

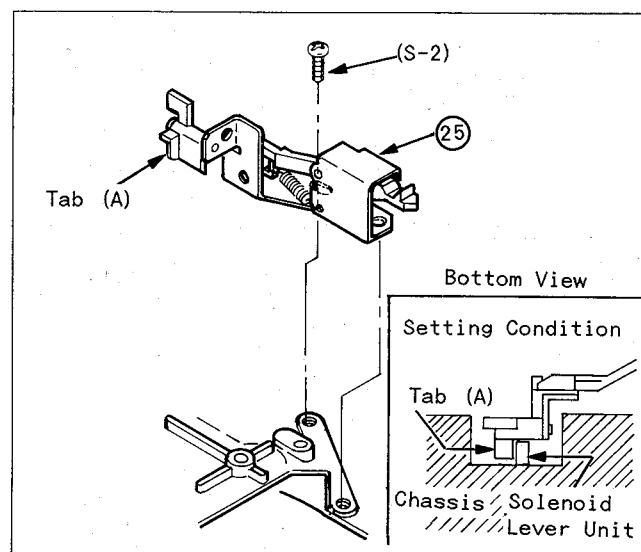


Fig. DM12

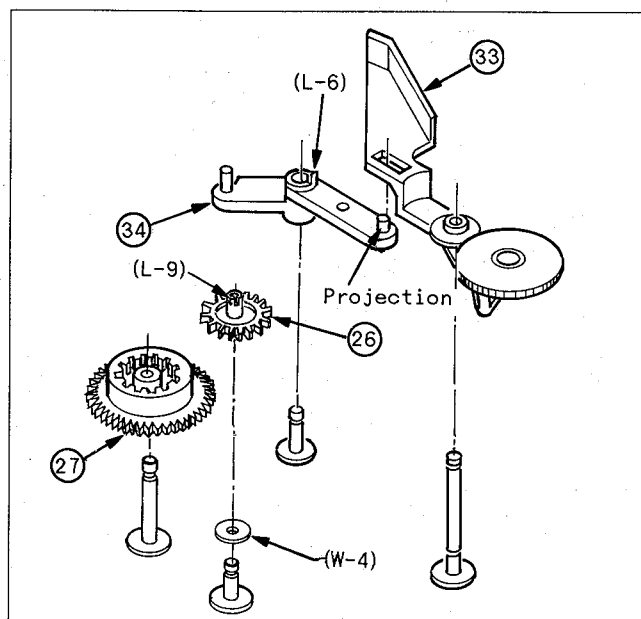


Fig. DM13

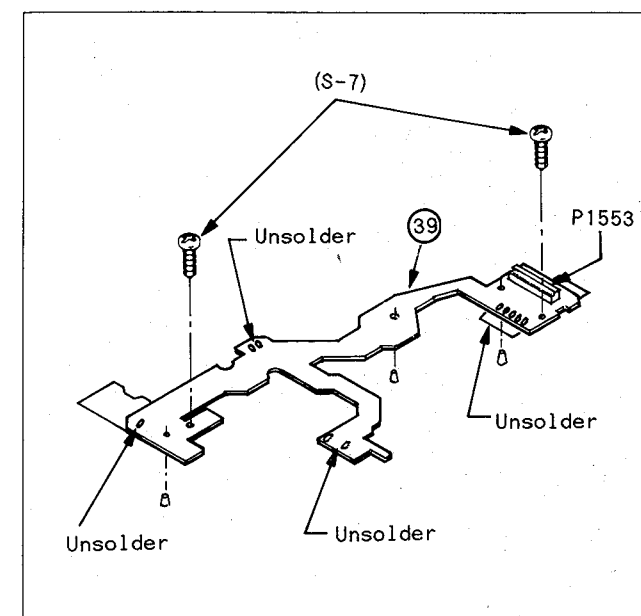


Fig. DM14

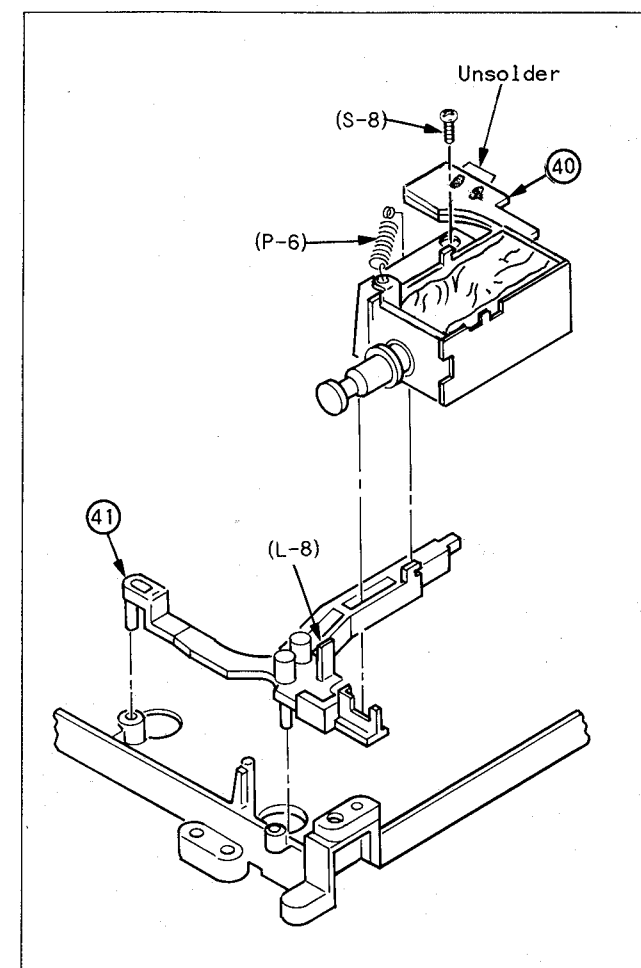


Fig. DM15

Reference <Notes> in Table 10 :

1. Wiggle it sideways to properly seat the Pressure Roller Arm Unit.
2. This cut washer is not reusable. If removed, install a new one.
3. Install the P5 Arm Unit so that the projection of the P5 Arm Unit seats in front of the projection on the chassis as shown in Fig. DM7.
4. Install the Cam Follower Arm Unit so that the pin on the Cam Follower Arm Unit meets the inner slot of the Main Cam Gear.
5. When reinstalling the Supply and Takeup Reel Tables, clean the rotating surface of them with a soft cloth.
6. Ensure the Tape Tension Arm is positioned as shown in Fig. DM1 for STOP Mode.

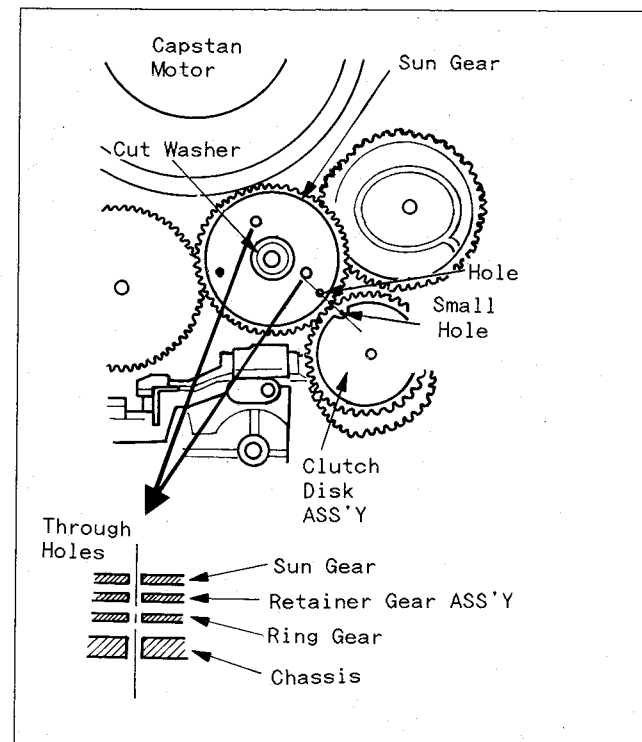


Fig. A6

11-5. ALIGNMENT PROCEDURES OF LOADING ARM-T UNIT, LOADING ARM-S UNIT AND SECTOR GEAR UNIT

1. Set the P2 and P3 posts to unloading position, then install the Loading Arm-T Unit and S Unit so that the hole on Loading Arm-T Unit is exactly in line with the hole on Loading Arm-S Unit.
2. Install the Sector Gear Unit so that the hole on Sector Gear Unit is exactly in line with the projection mark on Loading Arm-T Unit.
3. Install the Span Limiter using Retaining Rings and Screw, Fig. A7.

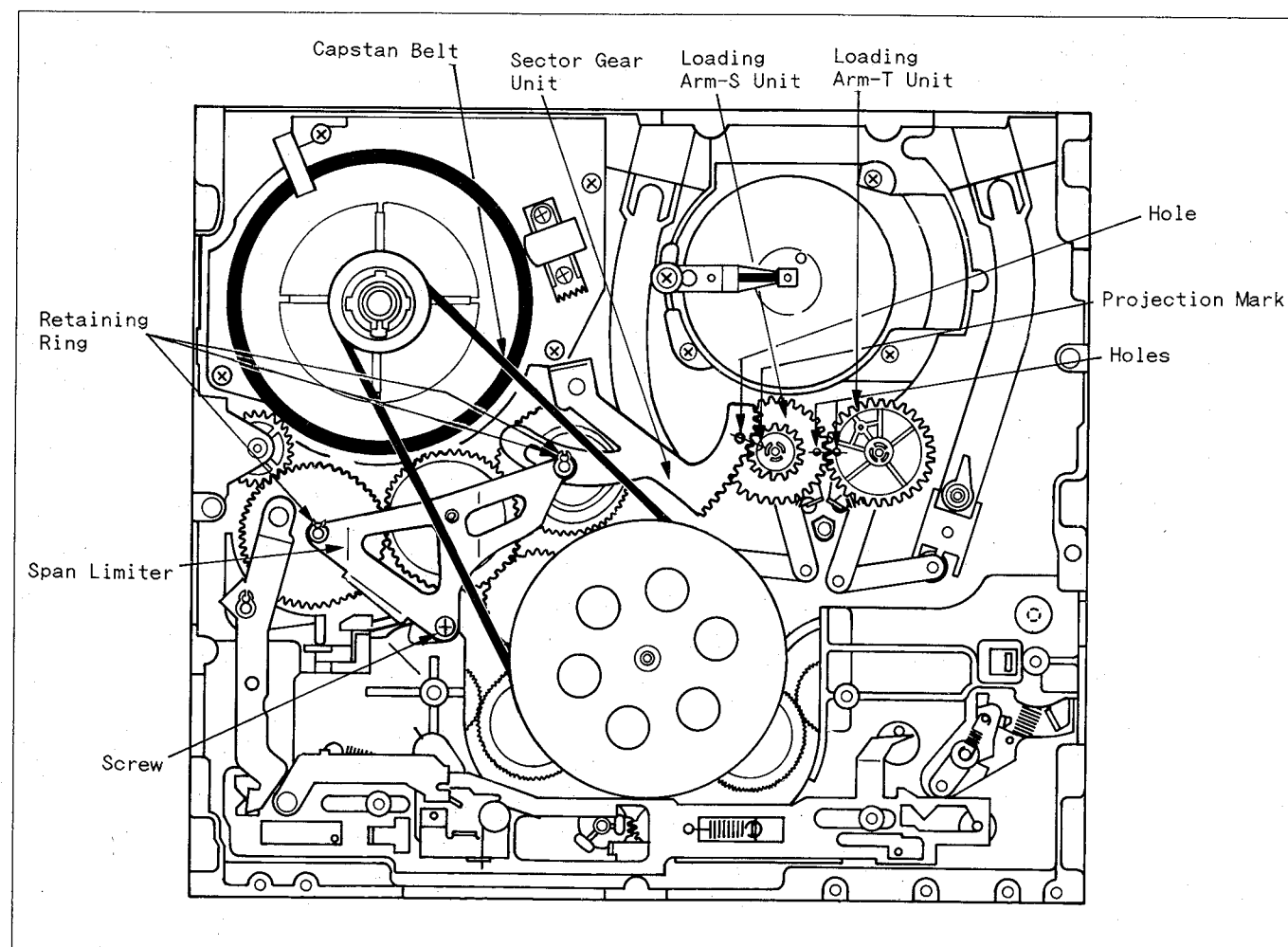


Fig. A7

11-6. ALIGNMENT PROCEDURES OF LINK GEAR

Note: Before this alignment, Sub Cam Gear position (and positions of all bottom side gears) must be in their correct alignment position for Half Load Stop (FF/REW) Mode as previously described. Push down to seat the Sector Gear Unit, refer to 11-5. Install the Link Gear so that the Indentation on the Link Gear aligns with the small hole on Sub Cam Gear as shown in Fig. A8.

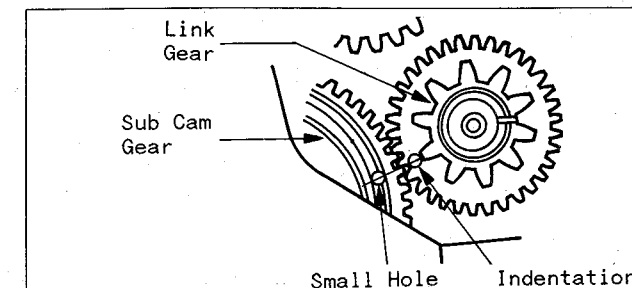


Fig. A8

11-7. ALIGNMENT PROCEDURES OF P5 SECTOR GEAR AND P5 ARM UNIT

1. Install the P5 Sector Gear so that the hole of P5 Sector Gear aligns with the last tooth on the P5 Arm Unit, refer to Fig. A9.

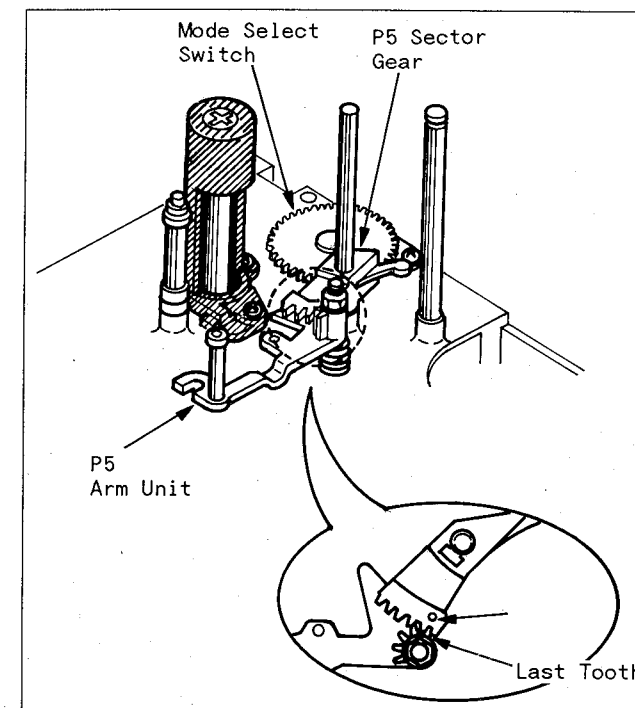


Fig. A9

11-8. ALIGNMENT PROCEDURES OF PRESSURE ROLLER LIFT CAM, MODE SELECT SWITCH AND PRESSURE REDUCTION GEAR

1. Push P5 Arm Unit clockwise until it stops and hold it in this position. Then install the Pressure Roller Lift Cam so that Hole on the Mode Select Switch aligns with Hole on the Pressure Roller Lift Cam and Projection on Pressure Roller Lift Cam aligns with Small Indentation on Pressure Reduction Gear when pushing the P5 Arm Unit completely as indicated by the arrow.

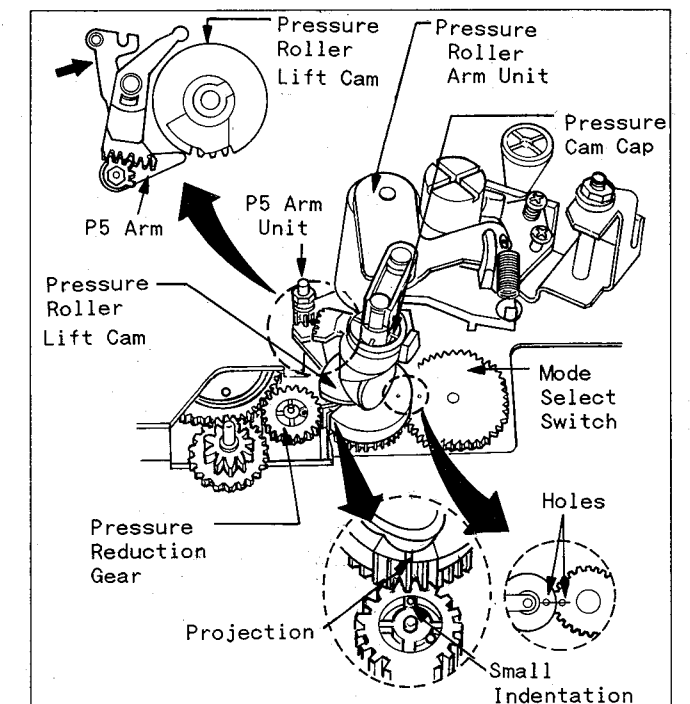


Fig. A10

11. ALIGNMENT PROCEDURES OF MECHANISM

The mechanism of this model is mostly engaged to the System Control Circuit, through the mode select switch. Therefore the relation between the mode select switch and the cam gear decides all further mechanical movement of the mechanical parts such as levers, gears, rollers and so on. For specific removal and installation procedures, refer to the Disassembly/Assembly Procedures on page 1-2-13.

If these parts are not properly aligned and only off by one tooth, the unit will be unloaded or stopped. It may result in damage to the mechanical or electrical parts. The overall mechanical condition of the bottom and top views are shown in Fig. A1 and Fig. A2. This mechanical adjustment is performed in the half Lead Stop (FF/REW) Mode. The detail of mechanical condition will be described later.

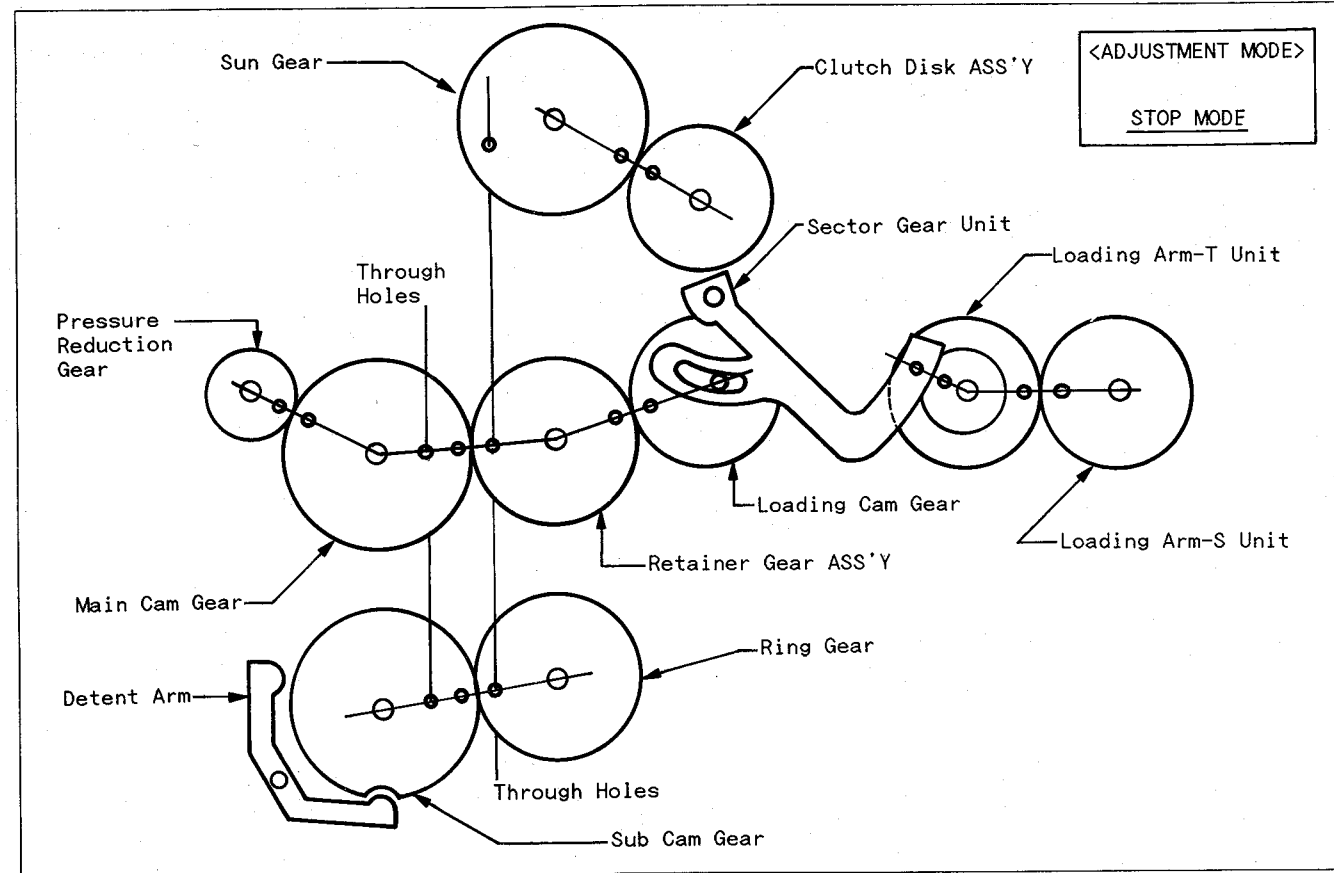


Fig. A1 Bottom View of Overall Mechanical Condition

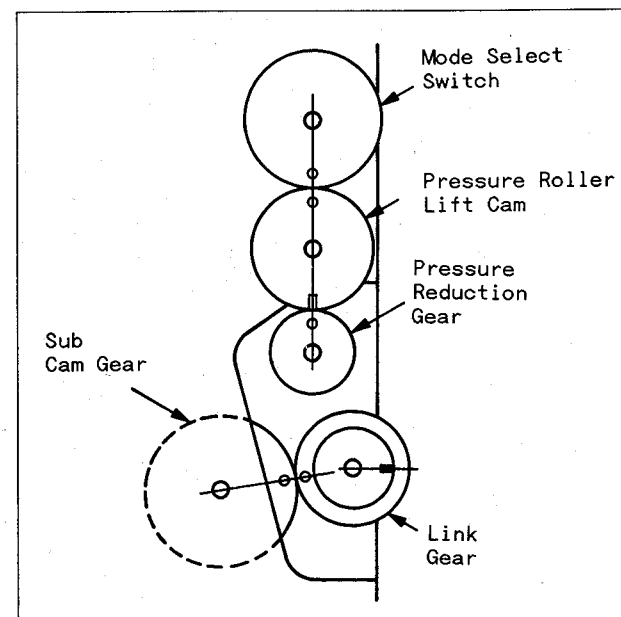


Fig. A2 Top View of Overall Mechanical Condition

Important Note :
All hole alignments must be made precisely so that the complete procedure will exactly align the gear teeth. If the alignment is off by only one tooth then the mechanism will not operate properly.

11-1. ALIGNMENT PROCEDURES OF SUB CAM GEAR, RING GEAR AND DETENT ARM

1. Install the Ring Gear so that the holes on Ring Gear are exactly in line with the holes on chassis as shown Fig. A3.
2. Install the Sub Cam Gear so that the hole on Sub Cam Gear is exactly in line with the hole on chassis, at the same time, the small hole (located just outside of large hole) on Sub Cam Gear is exactly in line with the hole on Ring Gear.
3. Install the Detent Arm.

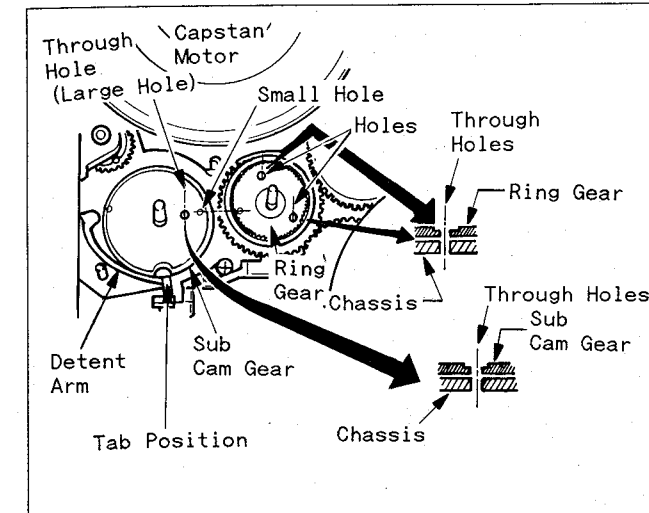


Fig. A3

11-2. ALIGNMENT PROCEDURES OF MAIN CAM GEAR AND PRESSURE REDUCTION GEAR

1. Install the Pressure Reduction Gear from top side of chassis.
2. Install the Main Cam Gear onto the Sub Cam Gear so that the small hole on Main Cam Gear is exactly in line with the small hole on Pressure Reduction Gear. And the large hole on Main Cam Gear is in line with the large hole on Sub Cam Gear as shown in Fig. A4.

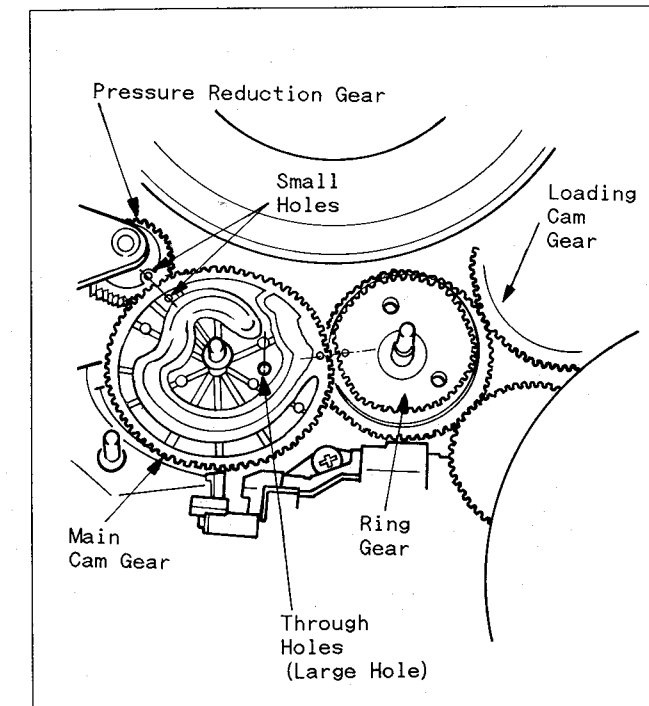


Fig. A4

11-3. ALIGNMENT PROCEDURES OF MAIN CAM GEAR, RETAINER GEAR ASS'Y AND LOADING CAM GEAR

1. Install the Retainer Gear ASS'Y so that the Holes on the Retainer Gear ASS'Y aligns with Holes on the Ring Gear and Holes on the Chassis. To facilitate aligning the three holes use a small hex. wrench or a metal pin.
2. Install the Loading Cam Gear so that the Hole on the Loading Cam Gear aligns with the Hole on the Retainer Gear ASS'Y.
3. Confirm that the Hole on the Main Cam Gear aligns with the Hole on the Retainer Gear ASS'Y.

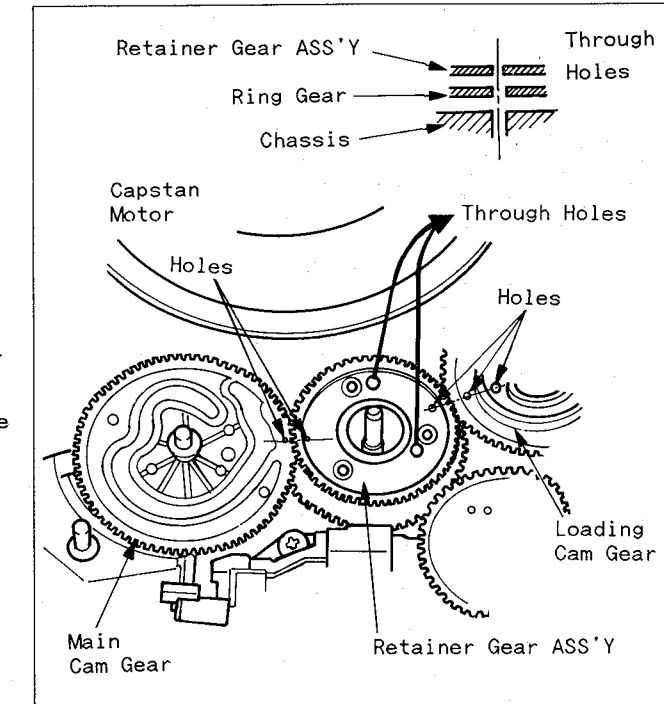


Fig. A5

11-4. ALIGNMENT PROCEDURES OF SUN GEAR AND CLUTCH DISK ASS'Y

1. Install the Sun Gear so that the Holes on the Sun Gear aligns with the through Holes on the Retainer Gear ASS'Y, Ring Gear and chassis. To facilitate aligning the four holes use a small hex. wrench or a metal pin.
2. Install the Clutch Disk ASS'Y so that the small Hole on the Clutch Disk ASS'Y aligns with Hole on the Sun Gear.

12. DISASSEMBLY/ASSEMBLY AND ADJUSTMENT OF CASSETTE UP UNIT

First, remove the Cassette Up Unit from chassis. This procedure starts with the condition that the Cassette Compartment Top Plate and Cassette Holder Unit have been removed. When reassembling, perform the step(s) in the reverse order.

12-A. Right Side

STEP /LOC. No.	START -ING No.	PART	REMOVAL		INSTALLATION
			Fig. No.	REMOVE *UNHOOK/UNLOCK/RELEASE	ADJUSTMENT #CONDITION
①	1	CASSETTE GUIDE -R- R	DA1	*3 (L-1)	-----
②	2	SUB WIPER ARM -R- R	DA1	*Wiper Spring -R- *Sub Wiper Spring -R- *2 (L-2)	-----
③	3	SLIDER SWITCH UNIT R	DA1	*3 (L-3)	Align the movable Projection (A) and Tab (B)
④	4	DOWN SUPPORT LEVER R	DA1	* (L-4)	-----
⑤	1, 3, 4	RACK ASS'Y R	DA1	-----	(+) Align the Triangle Marks

List of Abbreviations:

R = Right ; 3 (L-1) = 3 Locking Clips (L-1)

(+) : Refer to Exploded Views of Main Service Manual for Lubrication information.

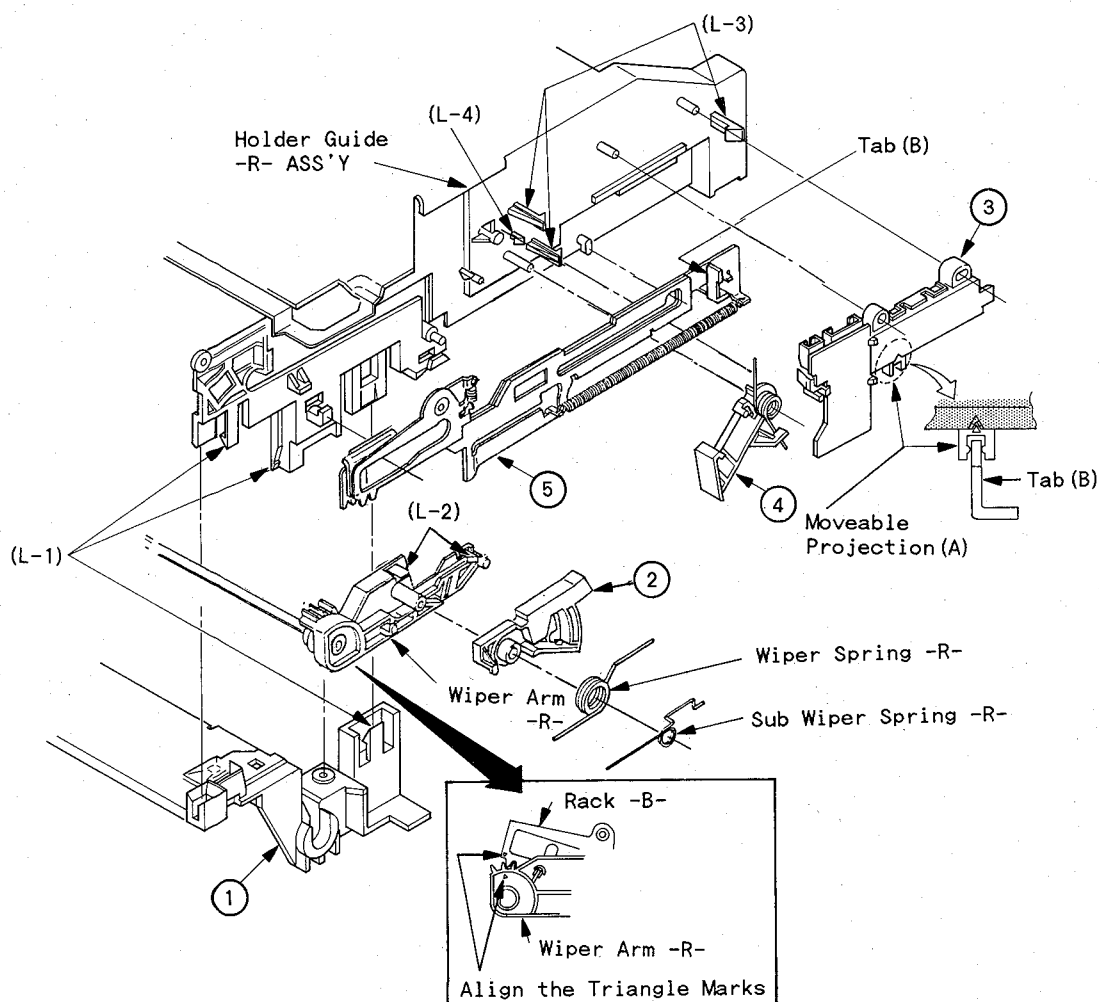


Fig. DA1
1-2-23

12-B. Left Side

STEP /LOC. No.	START -ING No.	PART	REMOVAL		INSTALLATION
			Fig. No.	REMOVE *UNHOOK/UNLOCK/RELEASE	
①	1	CASSETTE GUIDE -L- L	DA2	*3 (L-1)	-----
②	1	WIPER ARM -L- L	DA2	-----	-----
③	3	BLIND LEVER L	DA2	*(L-2)	-----

List of Abbreviations :

L = Left ; 3 (L-1) = 3 Locking Clips (L-1)

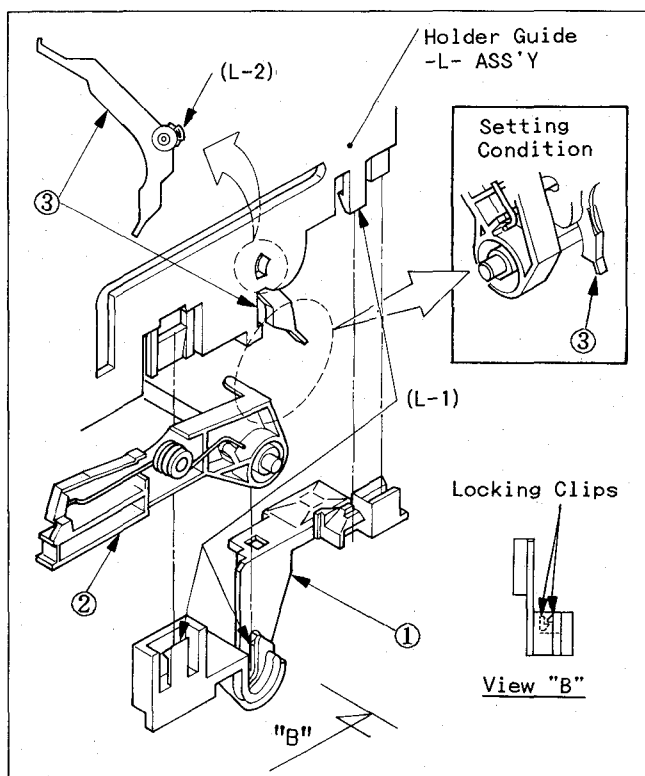


Fig. DA2

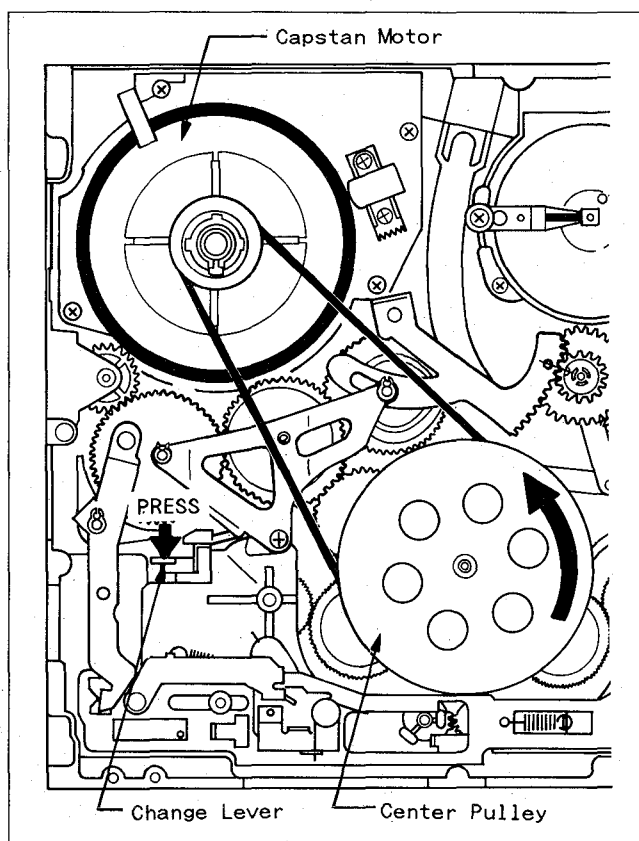


Fig. DA3

13. ADJUSTMENT OF CASSETTE UP UNIT AND CHASSIS

When reinstalling the Cassette Up Unit, mechanical adjustment (alignment) should be performed for proper operation as follows. And then, before reinstalling the Cassette Up Unit, ensure the Wiper Arm -R- is aligned as shown in box, Fig. DA1.

A. Method 1 (From Eject Position)

1. Press the Change Lever in the direction indicated by arrow as shown in Fig. DA3 (to release the lock).
2. Turn the Center Pulley counterclockwise until the mechanism is placed fully into the Eject position and maintain this position.

3. Memorize the position of the marking, Indentation or the Small Indentation on the Link Gear (located on top, right side, as shown in Fig. DA4). Turn the Center Pulley clockwise while watching the Link Gear so that the marking, Indentation or Small Indentation on the Link Gear rotates one revolution.

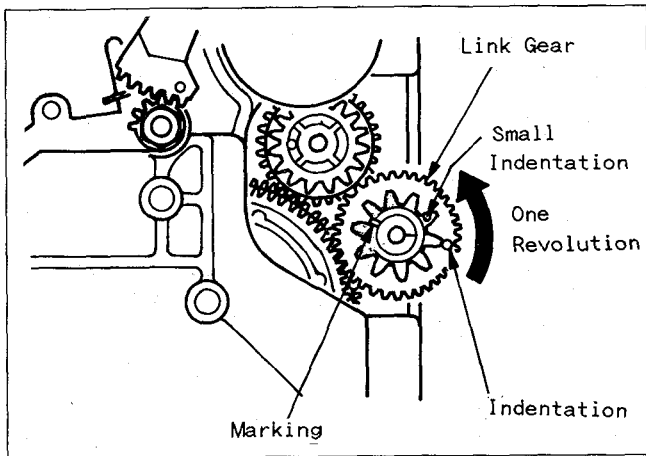


Fig. DA4

4. Slide the Cassette Holder just a little so that the first groove of the Rack -B (located on the bottom side of Cassette Up Unit) comes to the center of the rectangular hole as shown in Fig. DA5.
5. Slowly install the Cassette Up Unit onto the chassis so that the Small Indentation on the Link Gear fits into the first groove of the Rack -B as shown in Fig. DA5. If it does not fit, slide the Cassette Holder a little bit to mesh the gear teeth.

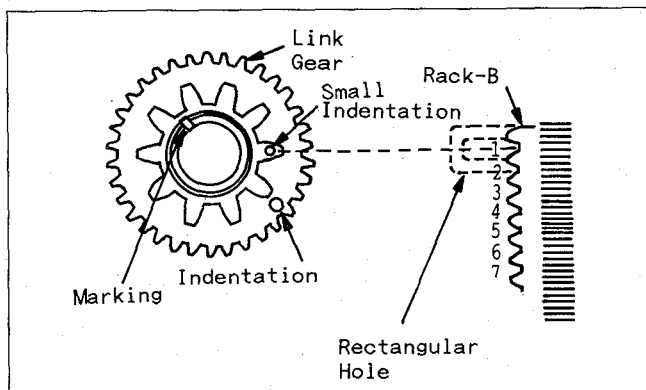


Fig. DA5

6. Reinstall the four Red Screws (B) as shown in Fig. DA6.

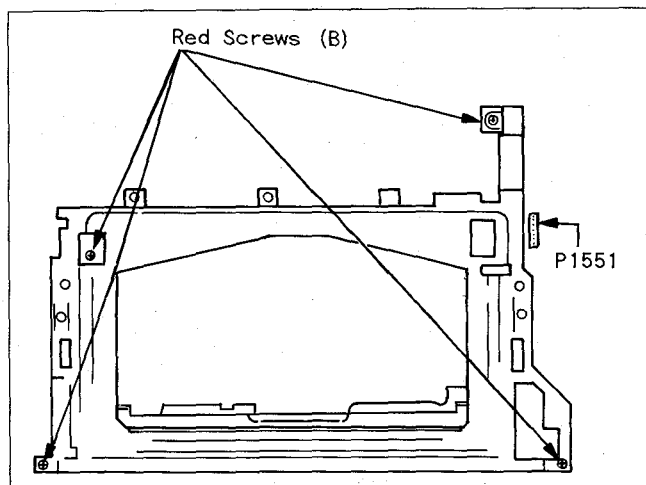


Fig. DA6

7. Check the operation of the cassette loading mechanism manually and confirm proper operation. If the mechanism does not operate properly then perform the B section of the procedure Method 2 (from Stop (FF/REW) Position).

B. Method 2 (From Stop (FF/REW) position)

Place the Cassette Up Unit with condition that the Cassette Compartment Top Plate and Cassette Holder Unit are not installed. Also, the following procedures for adjustment should be performed in full cassette down condition, refer to Fig. DA7. Then slowly install the Cassette Up Unit onto the chassis so that the last tooth of Rack-B fits into the marking slot of the Link Gear as shown in Fig. DA8. If it does not fit, slide the Cassette Holder a little bit to mesh the gear teeth. Reinstall the parts that were removed above.

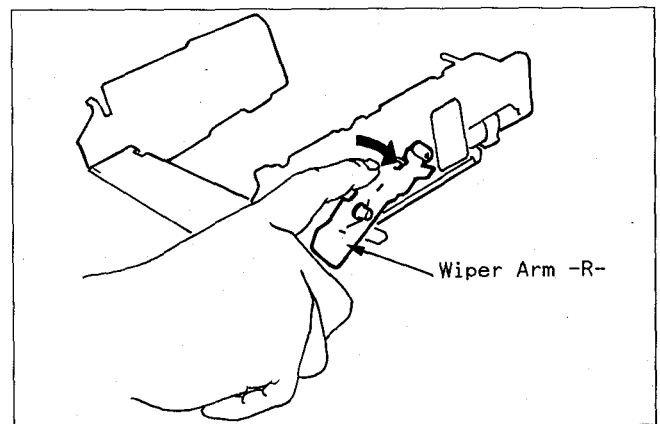


Fig. DA7

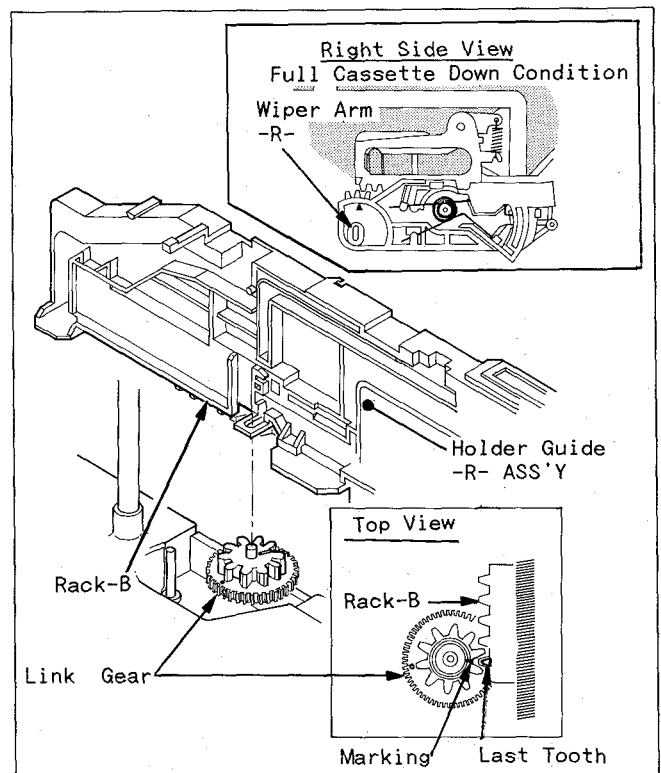
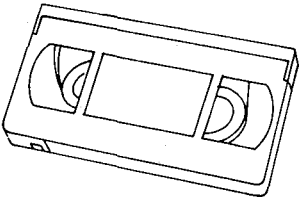
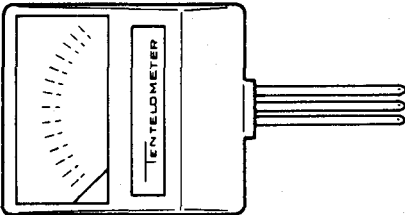
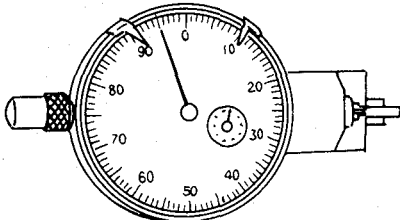
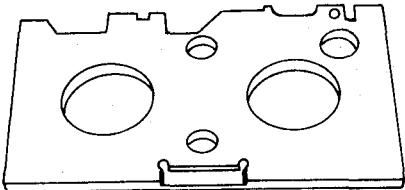
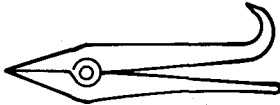
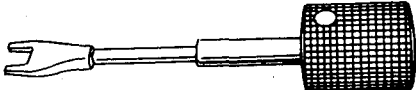
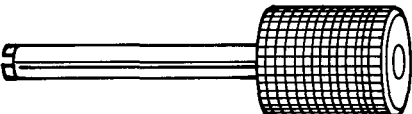
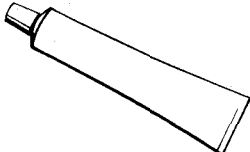
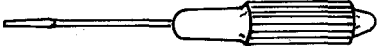
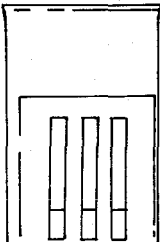


Fig. DA8

Service Fixtures & Tools

VFMS0001H6 VHS Alignment Tape 	Back Tension Meter (Made in U.S.A., Purchase Locally) 	VFKS0009 Reel Table Height Fixture 
VFKS0010 Post Adjustment Plate 	VFK0335 Retaining Ring Remover (3mm / 4mm) 	VFKS0003 H-Position Adj. Fixture 
VFK0330 Fine Adjustment Screwdriver 	VFK0329 Post Adjustment Screwdriver 	MOR265 Molytone Grease 
VFKS0031 V-Hold Adj. Tool 	VFKS0032 Lock Screw Wrench 	VFK27 Head Cleaning Stick 

ELECTRICAL ADJUSTMENT PROCEDURES

1. TEST EQUIPMENT

To perform the electrical adjustments completely, the following equipment is required.

1. Dual-Trace Oscilloscope
Voltage Range : 0.001 ~ 50V/Div.
Frequency Range : DC ~ 15MHz
Probes : 10 : 1, 1 : 1
2. Signal Generator
Sinewave : 0 ~ 10MHz
3. AC Millivolt Meter
Voltage Range : 0 ~ 1Vrms.
4. NTSC Video Pattern Generator
5. Color TV Receiver or Monitor
6. V-Hold ADJ. Tool (VFKS0031)
7. Plastic Tip Driver and Non-Metal Driver
8. Lock Screw Wrench (VFKS0032)
9. Isolation Transformer (Variable)
10. MTS/SAP Signal Generator
(TV Multi Channel Sound Modulator (U.S.A.))
11. Frequency Counter
Frequency Range : 0 ~ 20KHz
12. VHS Alignment Tape (VFMS0001H6)

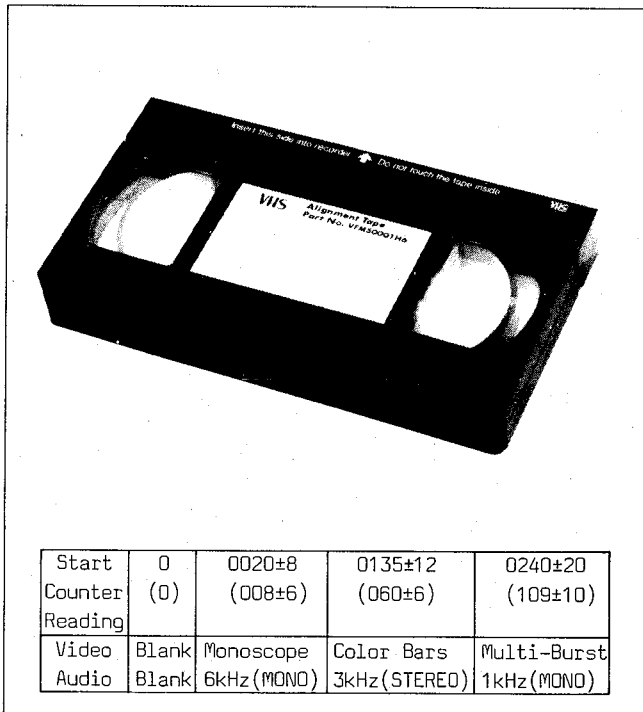


Fig. E1

2. HOW TO READ THE ADJUSTMENT PROCEDURES

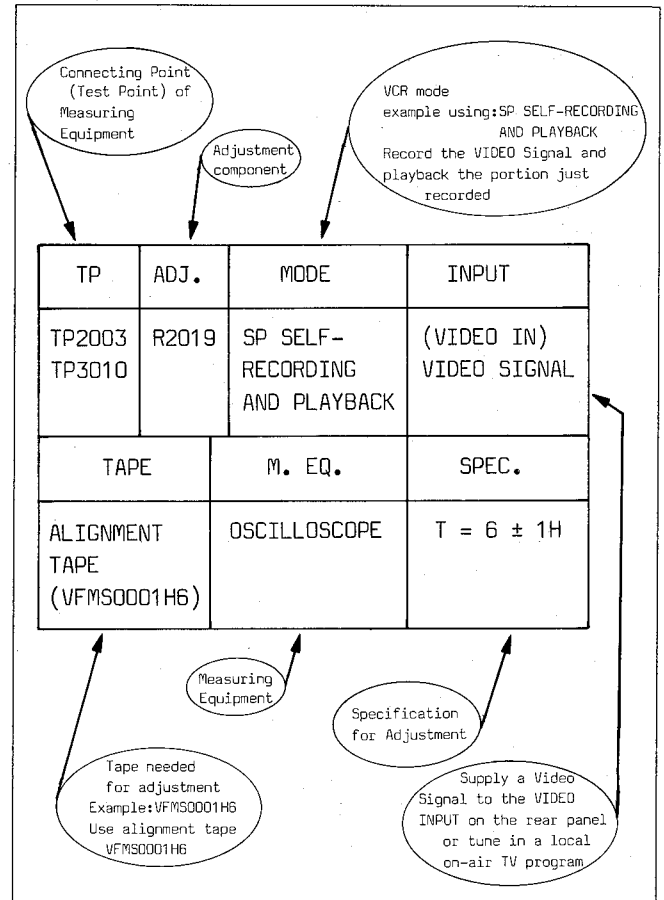


Fig. E2

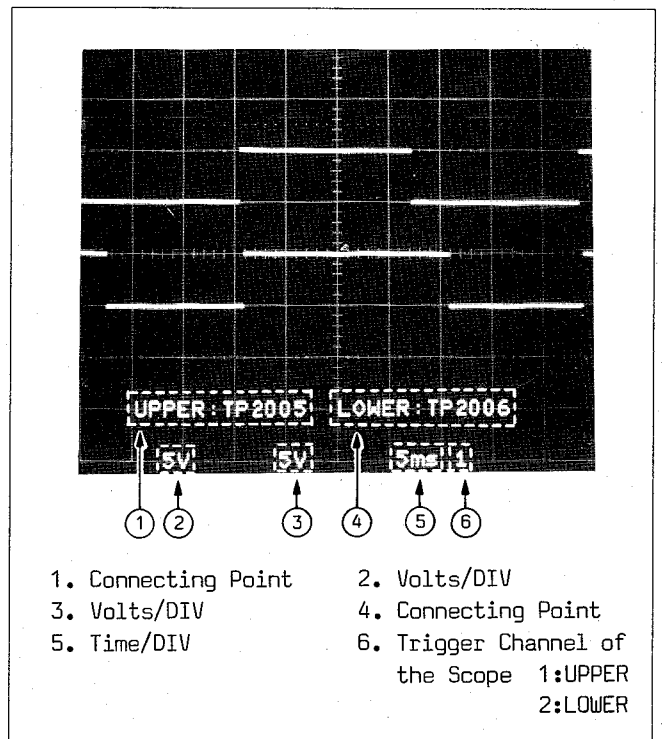


Fig. E3

Caution : Use an Isolation Transformer (Variable)

Because a Hot Chassis Ground is present in the Power Supply Circuit, an Isolation Transformer must be used. Also, in order to have the ability to increase the input voltage slowly, when troubleshooting this type Power Supply Circuit, a variable isolation transformer is required.

3. ADJUSTMENT PROCEDURES

These adjustment procedures consist of the following sections.

1. Servo Section
2. Audio Section
3. Luminance and Chrominance Section
4. TV Demodulator Section
5. MTS/SAP Section

3-1. SERVO SECTION

3-1-1. HEAD SWITCHING POSITION ADJUSTMENT (PG SHIFTER)

Purpose :

Determine the Head Switching Point during Playback.

Symptom of Misadjustment :

May cause Head Switching Noise and/or Vertical Jitter in the picture.

TP	ADJ.	MODE	INPUT
TP3001 TP6015	R6061	SP PLAY	
TAPE		M. EQ.	SPEC.
ALIGNMENT TAPE (VFMS0001H6) COLOR BARS		OSCILLOSCOPE	$T = 6 \pm 1 H$ ($0.38 \pm 0.06 \text{msec}$)

Note :

R6061 : System Control Section on the Main C.B.A.

TP6015, TP3001: Video Signal Process Section on the Main C.B.A.

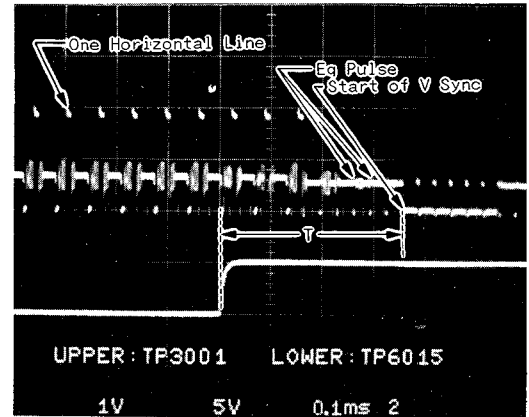


Fig. E4

3-1-2. V-LOCK ADJUSTMENT

Purpose :

Determine the V-lock Pulse (Artificial V Sync) Timing during Still.

Symptom of Misadjustment :

Vertical Jitter in the Still Picture.

TP	ADJ.	MODE	INPUT
	R6057	SLP STILL SELF-RECORDING AND PLAYBACK	(VIDEO IN) COLOR BAR (W/WHITE WINDOW)
TAPE		M. EQ.	SPEC.
BLANK TAPE		NTSC VIDEO PATTERN GENERATOR TV/MONITOR SCREEN	Refer to Fig. E5

Note :

R6057 : Audio Jack Section on the Main C.B.A.

Before this adjustment, place the unit in the Slow Mode and then adjust the Tracking Up/Down Buttons, using IR Wireless Transmitter Unit so that the noise on TV/MONITOR SCREEN is at a minimum.

1. Adjust the V-LOCK (R6057) on the Audio Jack Section so that stability at the center of the picture is maximum.

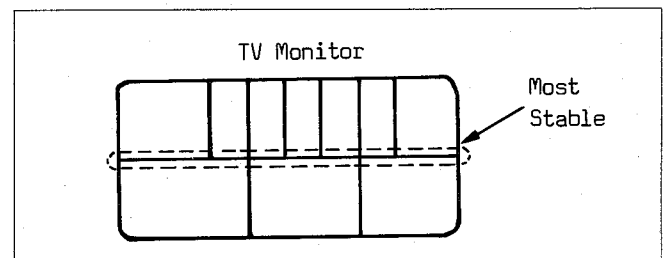


Fig. E5

3-2. AUDIO SECTION

3-2-1. FULL ERASE OSCILLATOR ADJUSTMENT

Purpose :

Optimize the Full Erase Oscillator Frequency.

Symptom of Misadjustment :

Beats will be appeared on the TV Monitor.

TP	ADJ.	MODE	INPUT
*	T4101	SP REC	
TAPE	M. EQ.		SPEC.
BLANK TAPE	FREQUENCY COUNTER		$70 \pm 3 \text{ KHz}$

* Lead Pin(+) of Capacitor C4101

Note :

Use a probe 10 : 1

T4101 : Full Erase ASS'Y

3-2-2. NORMAL AUDIO SECTION (MONO)

AUDIO PLAYBACK GAIN ADJUSTMENT (PB LEVEL)

Purpose :

To align the Playback Level of the Audio Signal with the Recording (E-E) Level.

Symptom of Misadjustment :

If the Playback Level is too low, Audio Output Level is attenuated. If the Playback Level is too high, Audio Output Level is increased. Playback interchangeability is inadequate.

TP	ADJ.	MODE	INPUT
TP4001	R4014	SP SELF-RECORDING AND PLAYBACK	(AUDIO IN) 1KHz, -10dBV (VIDEO IN) VIDEO SIGNAL
TAPE	M. EQ.		SPEC.
BLANK TAPE	SIGNAL GENERATOR AC MILLIVOLT METER or OSCILLOSCOPE		*

Note :

TP4001, R4014 : Audio Section on the Main C.B.A.

* Adjust PB LEVEL (R4014) so that the voltage of playback is equal to that of the recording level.

3-2-3. Hi-Fi AUDIO SECTION

1. AUDIO RECORDING CURRENT ADJUSTMENT

Purpose :

Set the optimum Audio Record Level.

Symptom of Misadjustment :

If the Audio Record Level is too high, Beats may appear in the picture. If the Level is too low, Playback Output level will deteriorate and significant noise will be heard in the Audio.

(SETUP)

- Set the Input Select Switch on the Front Panel to LINE Mode.

TP	ADJ.	MODE	INPUT
TP4401 (HOT) TP4402 (GND)	R4410	SP REC	(AUDIO IN) NO SIGNAL USE SHORTED PHONO PLUG
TAPE	M. EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE		$240 \pm 10 \text{ mVp-p}$

Note :

TP4401, TP4402, R4410 : Head Amp C.B.A. Unit

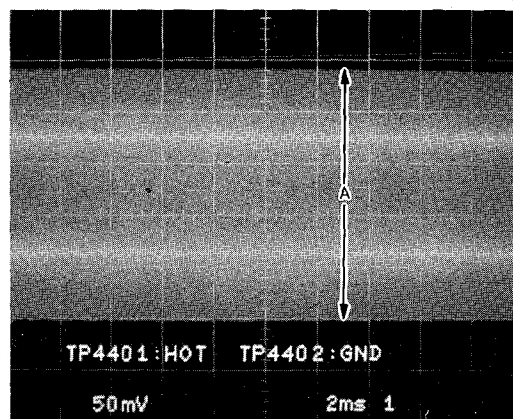


Fig. E6-1

Location of Test Points and Adjustment Points

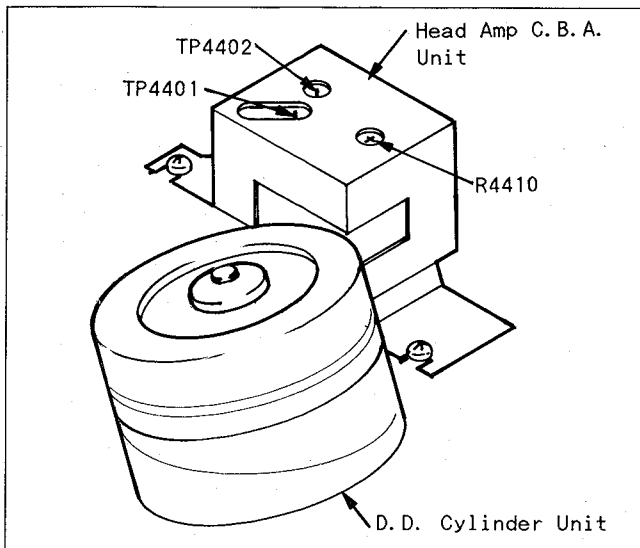


Fig. E6-2

2. AUDIO HEAD SWITCHING POSITION ADJUSTMENT (PG SHIFTER)

Purpose :

Determine the Head Switching Point during playback.

Symptom of Misadjustment :

May cause Head Switching Noise in the Audio.

Set tracking control to the Neutral position by using the Buttons on the IR Wireless Transmitter Unit. If this does not properly determine the Neutral position then eject the tape and reinsert it again, this will access the Neutral position of the Tracking Control.

TP	ADJ.	MODE	INPUT
TP6015 Pin 27 of IC4201	R4236	SP SELF- RECORDING AND PLAYBACK	(VIDEO IN) VIDEO SIGNAL
TAPE	M. EQ.	SPEC.	
BLANK TAPE	OSCILLOSCOPE	TA = 5.5 ± 0.1 msec.	

Note :

TP6015 : Video Signal Process Section on the Main C.B.A.
R4236, IC4201 : Hi-Fi Audio & MTS/SAP C.B.A.

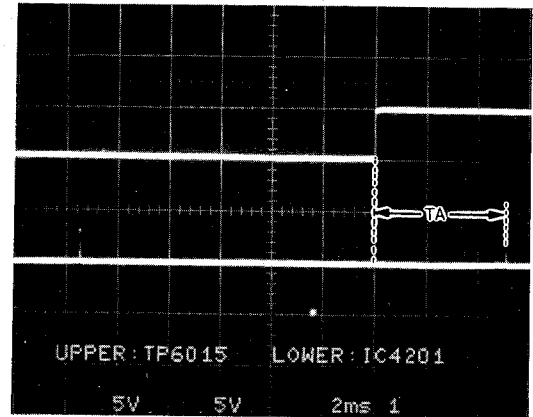


Fig. E7

(Confirmation)

1. Play back the portion just recorded and confirm that the envelope at TP4006 is as shown in Fig. E8.

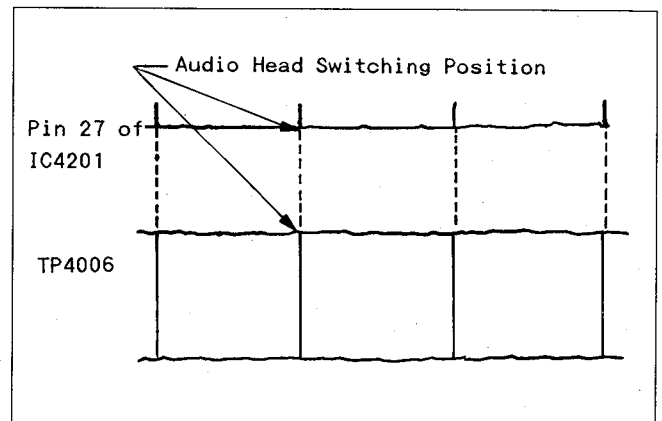


Fig. E8

2. If the envelope has the drop out (A-portion of TP4006 in Fig. E9), adjust the AUDIO HEAD SW (R4236) so that the audio envelope has no drop out portion as shown in Fig. E9.

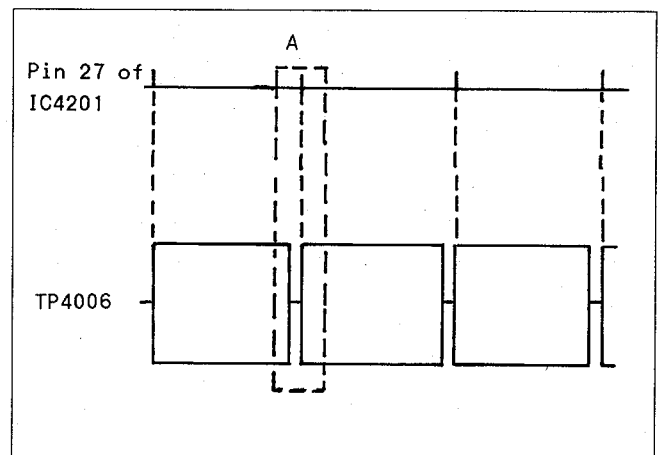


Fig. E9

3. AUDIO MUTING ADJUSTMENT

Purpose :

To eliminate the Hi-Fi Audio function when the FM Carrier level is inadequate.

Symptom of Misadjustment :

Significant noise will be heard in the Audio, or the Unit will not go into the Hi-Fi Audio mode.

(SETUP)

1. Set the Input Select Switch on the Front Panel to LINE mode.
2. Set Tracking Control to the Neutral position by using the Buttons on the IR Wireless Transmitter Unit. If this does not properly determine the Neutral position then eject the tape and reinsert it again, this will access the Neutral position of the Tracking Control.
3. Set the Audio Out Select button on the Front Panel to Hi-Fi/L+R Mode.

TP	ADJ.	MODE	INPUT
TP4006	R4234	SP SELF-RECORDING AND PLAYBACK	(AUDIO IN (L, R)) NO SIGNAL USE SHORTED PHONO PLUGS
TAPE		M. EQ.	SPEC.
BLANK TAPE		OSCILLOSCOPE	

Note :

TP4006 : Audio Section on the Main C.B.A.

R4234 : Hi-Fi Audio & MTS/SAP C.B.A.

1. Insert a cassette tape and make a recording in the SP mode.
2. Play back the portion just recorded.
3. Adjust the Tracking Control, using IR Wireless Transmitter Unit so that the amplitude of the signal at TP4006 is reduced to 1/3.
4. First adjust AUDIO MUTING (R4234) until the Hi-Fi indication turns OFF.
5. Then slowly adjust AUDIO MUTING (R4234) to the point where the Hi-Fi indication just turns ON.
6. Confirm that the audio on CH-L and CH-R does not contain any abnormal sounds.

3-3. LUMINANCE AND CHROMINANCE SECTION

1. LOW FREQUENCY NOISE CANCELLER ADJUSTMENT (LINE NOISE CANCELLER)

Purpose :

Improve the overall S/N Ratio especially in the Low Frequency Component.

Symptom of Misadjustment :

The S/N Ratio will be lower.

TP	ADJ.	MODE	INPUT
TP3005	R3017	SLP SELF-RECORDING AND PLAYBACK	(VIDEO IN) NTSC COLOR BAR (W/WHITE WINDOW)
TAPE	M. EQ.		SPEC.
BLANK TAPE	OSCILLOSCOPE NTSC VIDEO PATTERN GENERATOR		Refer to Fig. E10

Note :

TP3005, R3017 : Video Signal Process Section on the Main C.B.A.

1. Adjust the LINE NOISE CANCELLER (R3017) on the Video Signal Process Section of the Main C.B.A. so that the width (W) of signal is at a minimum.

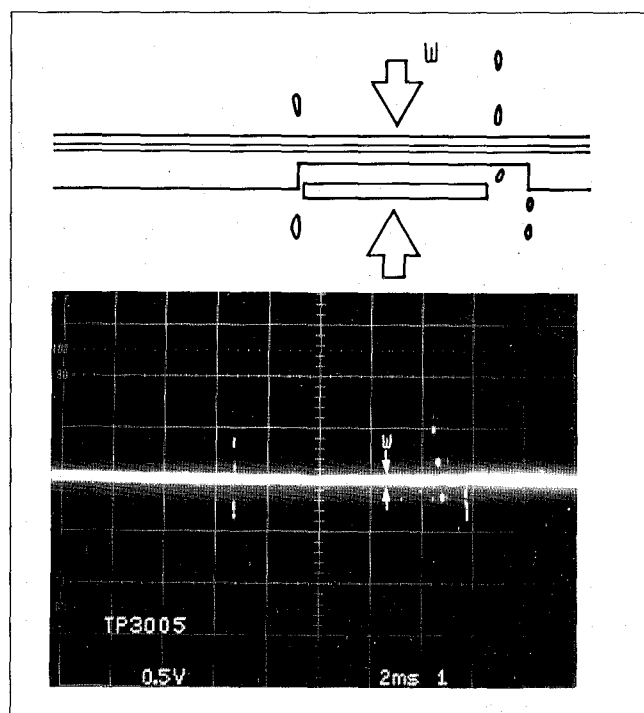


Fig. E10

2. OSD POSITION ADJUSTMENT

Purpose :

Optimize the OSD Position.

Symptom of Misadjustment :

OSD Position is changed from center.

TP	ADJ.	MODE	INPUT
	C3043	STOP (OSD MODE)	(VIDEO IN) NTSC COLOR BAR
TAPE	M. EQ.		SPEC.
	TV/MONITOR SCREEN NTSC VIDEO PATTERN SIGNAL GENERATOR		Refer to Fig. E11

Note :

C3043 : Video Signal Process Section on the Main C.B.A.

1. Push the RECALL Button using IR Wireless Transmitter Unit to display Counter.
2. Adjust the OSD POSITION (C3043) on the Video Signal Process Section from the Component Side through a Hole in shield cover so that the Character on the TV/MONITOR SCREEN aligns with the Vertical Line of the Color Bars as shown in Fig. E11.

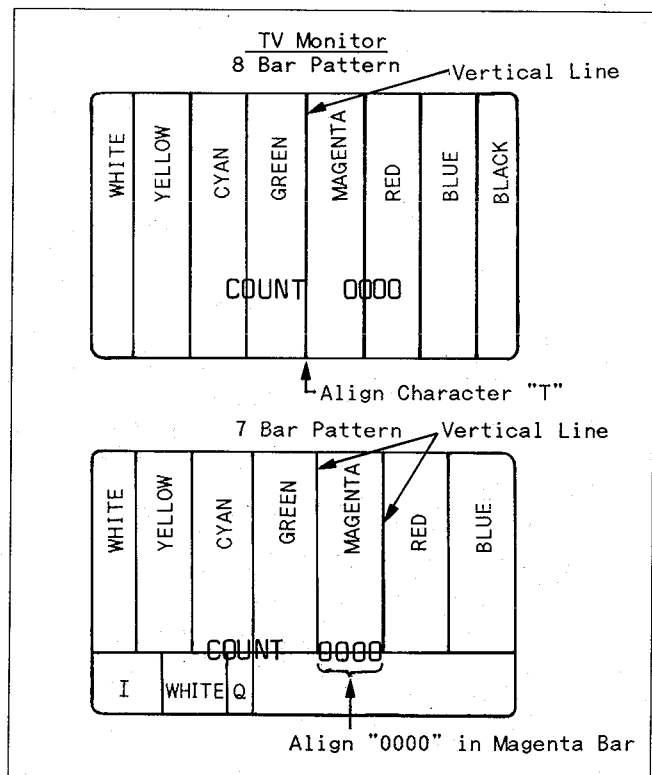


Fig. E11

3-4. TV DEMODULATOR SECTION

(CAUTION)

Since the UHF/VHF Tuner/TV Demodulator ASS'Y has already been adjusted at the factory, do not try to adjust unless absolutely necessary.

3-4-1. FIELD ADJUSTMENT

A. VCO ADJUSTMENT

Purpose :

To adjust the Frequency of the Tank Circuit to 45.75 MHz, which is used for the synchronous detection circuit.

Symptom of Misadjustment :

If the Detection Circuit deviates from 45.75MHz excessively, the picture will either have a beat or smear and in some cases it may disappear.

Tune in any Local Broadcast, then adjust T701 while watching the TV Monitor Screen as follows :

1. Turn T701 in both directions, right and left, far enough to find the point where Noise Bands or Beats appear on the TV Screen.
2. After finding those points in both directions, adjust T701 so that it is exactly half-way between those two points.
3. After the above adjustment, tune in another Local Broadcast. Then confirm that no Noise Bands or Beats appear on the TV Screen.

B. AFT TANK ADJUSTMENT

Purpose :

To align the Center Frequency of AFT with the picture IF carrier when the Center Frequency is shifted in the AFT Mode.

Symptom of Misadjustment :

Any slight Frequency shift in the AFT Transformer will cause either a Beat or Smear to appear in the picture.

Tune in any Local Broadcast (called the "Original" Channel), then adjust T702 while watching the TV Monitor Screen as follows :

1. From the Broadcast, turn T702 slightly in either direction.
2. Tune the next closest channel, and re-tune the Original Channel in quick succession.

3. Turn T702 in both directions, right and left, far enough to find the point where Noise Bands or Beats appear on the TV Screen while repeating step 2 above.

Note :

If you could not tune in any Local Broadcast because of the misadjustment of AFT, first turn T702 fully counterclockwise so that the core of T702 comes out. From this position turn T702 clockwise. After each 360° turn, perform the step 2 above again. Then adjust T702 so that the picture on the TV Monitor is stabilized when re-tuning the Original Channel. After the above operations, perform steps 1-3 under B.

4. After finding the two points where noise bands or beats appear, adjust T702 to exactly half-way between them.
5. After the above adjustment, tune in another Local Broadcast. Then confirm there are no Noise Bands or Beats appearing on the TV Screen.

C. SIF ADJUSTMENT

Purpose :

To extract the 4.5 MHz Audio Signal Component from the Audio IF Detection Circuit and into the Audio SIF Circuit.

Symptom of Misadjustment :

Buzz will occur in the audio.

1. Tune in any Local Broadcast, then turn T704 in both directions, right and left, while listening in order to find the Limits of good sound.
2. After finding the points marking the limit of this range, adjust T704 to exactly half-way between them.
3. After the above adjustment, tune in another Local Broadcast. Then confirm that there is no Buzz, and that the Volume is not abnormally low.

D. BURST LEVEL ADJUSTMENT

Purpose :

Adjusts the Video IF Circuit to function properly and the Video Signal is sent out with stability as specified.

Symptom of Misadjustment :

If the Video Output Signal is more than the Specified Level, Beats will appear on the picture. Conversely, if the Video Output Signal is less than the specified level, the Chroma S/N Ratio will be lower.

1. Tune in any Local Broadcast, then observe the Video Signal on the Oscilloscope using Pin 10 of UHF/VHF Tuner/TV Demodulator ASS'Y.
2. Then change the Channel to select the Channel with average p-p Level, Sync Level and Burst Level. (with Standard Channel, the p-p Level is 1.0 Vp-p and Sync Level is almost 28 % of Video Signal)
3. Then adjust R718 so that the Burst Level is 80 % of Sync Level.
4. After the above adjustment, tune in another Local Broadcast. Then confirm that there is not an absence of Color, and that no Beats appear on the TV Monitor.

E. RF AGC ADJUSTMENT

Purpose :

To determine the correct adjustment of RF AGC.

Symptom of Misadjustment :

If the AGC is activated at a point lower than 65dB μ , the Output Signal from the RF Amplifier will decrease, causing the S/N Ratio to become poor. If the AGC is activated at a point higher than 65dB μ , Cross Modulation will occur.

Note :

Before attempting to adjust, Carefully bend the capacitor C7003 in the opposite side to access the R739.

1. Tune in any Local Broadcast, then adjust R739 so that Noise or Beats on the TV Monitor Screen are at a minimum.
2. After the above adjustment, tune in another Local Broadcast. Then confirm that no Noise Bands or Beats appear on the TV Screen.

3-5. MTS/SAP SECTION

PRECAUTION FOR MTS/SAP ADJUSTMENT

Before the adjustment, it is necessary to understand how the MTS/SAP Signal Generator works in order to avoid mistakes in the following adjustment procedures.

1. Degree of Modulation

a. Baseband Spectrum

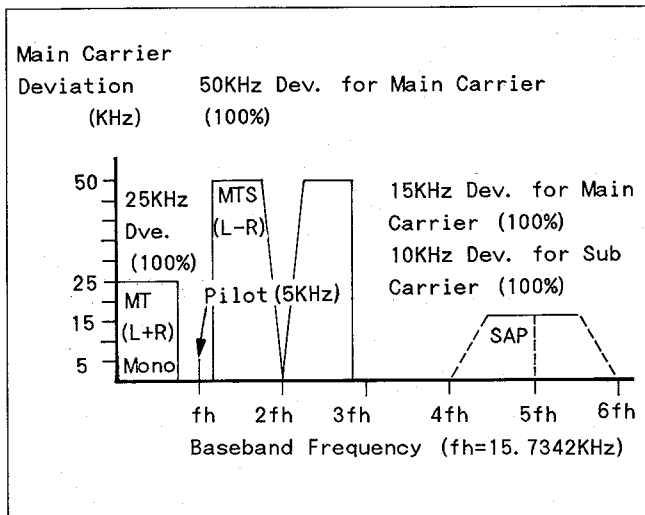


Fig. E12

b. 100% Modulation

	DEV. FOR MAIN CARRIER	DEV. FOR SUB CARRIER
(L+R) Signal	25KHz	-----
(L-R) Signal	50KHz	-----
SAP Signal	15KHz	10KHz

Note :

Output Level of the MTS/SAP Signal Generator for 100% Modulation depends on the type of MTS/SAP Signal Generator used.

c. Proportional Modulation

The Proportional Modulation is shown by the percentage of the deviation frequency compared with the 100% Modulation deviation frequency.

Note :

Degree of Modulation for MTS (L+R), (L-R), (L) and (R) Modes generally the modulation proportion of the MTS (L) or (R) Mode is one half of the proportion of the MTS (L+R) or (L-R) Mode. For example, when the modulation proportion is 14% for MTS (L-R) Mode, the modulation proportion changes from 14% to 7% by changing the Mode from MTS (L-R) to MTS (L). This depends on the type of the MTS/SAP Signal Generator and so confirmation of the relation between Modes using the operation instruction manual for each Generator is necessary.

Preparation for adjustment of the MTS/SAP C.B. A.

When adjusting the Hi-Fi Audio & MTS/SAP C.B. A. using the composite signal as the input signal, before adjusting, cut the wire to open jumper (W221) on the Audio Section of the Main C.B. A. from the component side, refer to Fig. E13 and supply a signal through a Electrolytic Capacitor (10 μ F/16V) to TP9001 on the Hi-Fi Audio & MTS/SAP C.B. A. as shown in Fig. E14.

Note :

1. Solder together the wire jumper (W221) that was opened after the following procedure is completed.
2. When adjusting the Hi-Fi Audio & MTS/SAP C.B. A. using the RF signal, this procedure is not necessary.

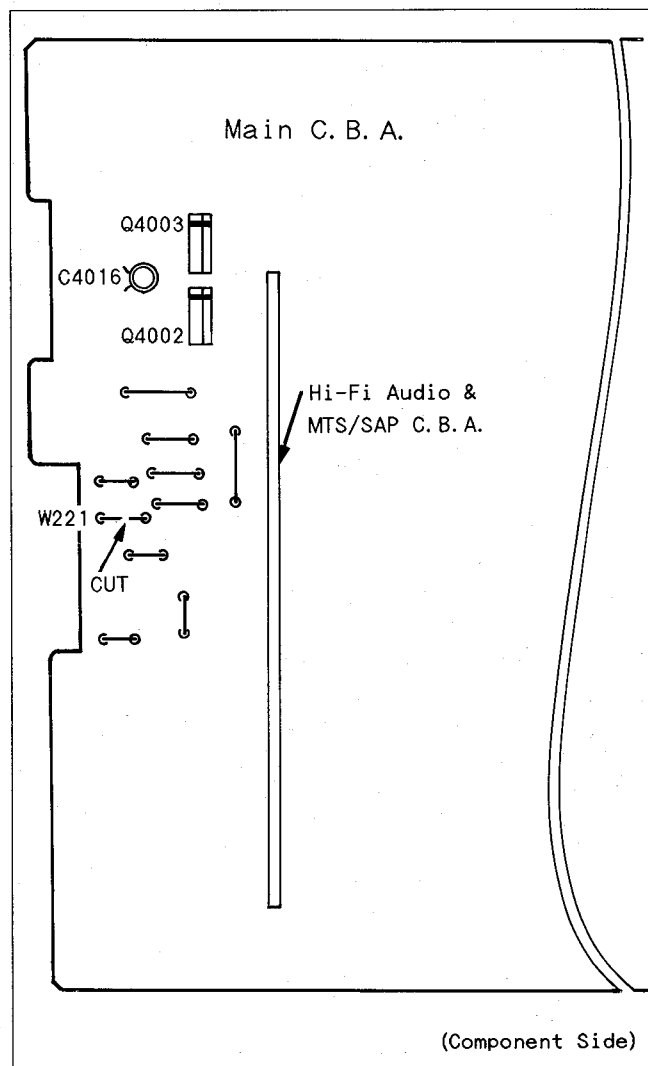


Fig. E13

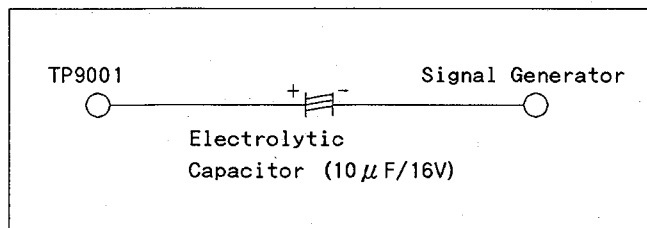


Fig. E14

1. SAP BPF, STEREO LPF ADJUSTMENT

Purpose :

To optimize the Frequency Characteristics in the SAP BPF and STEREO LPF Circuits.

Symptom of Misadjustment :

Obvious distortion or malfunction.

TP	ADJ.	MODE	INPUT
TP9002	R9011	STOP	(TP9001) 62.94KHz $\pm$ 500Hz SINEWAVE 150 $\pm$ 5mVrms
TAPE	M. EQ.		SPEC.
AC MILLIVOLT METER SIGNAL GENERATOR			

Note:

TP9001, TP9002, R9011 : Hi-Fi Audio & MTS/SAP C. B. A.

1. Connect the AC Millivolt Meter to TP9002.
2. Adjust R9011 so that the voltage at TP9002 is at a minimum (approximately 10mVrms).

2. STEREO VCO ADJUSTMENT

Purpose :

To adjust the Frequency of STEREO VCO to 15.780KHz.

Symptom of Misadjustment :

The STEREO Signal will not be tuned properly resulting in stereo sound drop out.

(SETUP)

1. Connect a jumper Between TP9003, TP9007 and TP9012 on the Hi-Fi Audio & MTS/SAP C. B. A.

TP	ADJ.	MODE	INPUT
TP9004	R9004	STOP	
TAPE	M. EQ.		SPEC.
	FREQUENCY COUNTER		15.780KHz $\pm$ 100Hz

Note :

TP9004, R9004 : Hi-Fi Audio & MTS/SAP C. B. A.

3. SAP VCO ADJUSTMENT

Purpose :

To eliminate the STEREO Signal.

Symptom of Misadjustment :

The SAP Signal can not be tuned properly resulting in distortion.

(SETUP)

1. Connect a jumper Between TP9005 and TP9006 on the Hi-Fi Audio & MTS/SAP C. B. A.

TP	ADJ.	MODE	INPUT
TP9009	R9014	STOP	(TP9001) 15.73KHz $\pm$ 100Hz SINEWAVE 500 $\pm$ 10mVrms
TAPE	M. EQ.		SPEC.
AC MILLIVOLT METER SIGNAL GENERATOR			

Note :

TP9001, TP9009, TP9014 : Hi-Fi Audio & MTS/SAP C. B. A.

1. Connect the AC Millivolt Meter to TP9009.
2. Adjust R9014 so that the voltage at TP9009 is at a minimum (approximately 0.8mVrms).

4. STEREO SEPARATION ADJUSTMENT

Purpose :

To separate the L and R Channels of STEREO Signal.

Symptom of Misadjustment :

The L and R Channels of STEREO Signal will not be separated properly resulting in no stereo-
phonic effect.

Note :

1. The following adjustment procedures A and B are interdependent and must be performed at the same time in sequential order.
2. For this adjustment, RF INPUT Signal must be used as the INPUT Signal.
3. Set the Audio REC Switch on the Front Panel to Main Mode.
4. Set the Audio Out Switch on the Front Panel to L/R Mode.
5. Set the MONO Switch on the Front Panel to "OFF".

A. INPUT LEVEL ADJUSTMENT

TP	ADJ.	MODE	INPUT
TP9001	R7002	STOP	(ANTENNA INPUT TERMINAL) MONO $300\text{Hz} \pm 5\text{Hz}$ Modulating 100%
TAPE	M. EQ.		SPEC.
	AC MILLIVOLT METER MTS/SAP SIGNAL GENERATOR		$250 \pm 10\text{mVrms}$

Note :

TP9001 : Hi-Fi Audio & MTS/SAP C. B. A.
R7002 : Demodulator Section on the Main C. B. A.

1. Connect the RF OUTPUT of the MTS/SAP Signal Generator to Antenna Input Terminal.
2. Connect the AC Millivolt Meter to TP9001.
3. Adjust the R7002 on the Demodulator Section of the Main C. B. A. so that the voltage at TP9001 is $250 \pm 10\text{mVrms}$.

B. SEPARATION ADJUSTMENT

TP	ADJ.	MODE	INPUT
AUDIO OUT (R)	R9020 (LOW FRE- QUENCY)	STOP	(ANTENNA INPUT TERMINAL) MTS (ONLY L CH) $300 \pm 5\text{Hz}$ Modulating 14% or 7% (Refer to Fig. E15)
	R9018 (HIGH FRE- QUENCY)	STOP	(ANTENNA INPUT TERMINAL) MTS (ONLY L CH) $3\text{KHz} \pm 50\text{Hz}$ Modulating 14% or 7% (Refer to Fig. E16)
TAPE	M. EQ.		SPEC.
	OSCILLOSCOPE MTS/SAP SIGNAL GENERATOR		*

* Adjust the amplitude of the waveform to the minimum.

Note :

R9018, R9020 : Hi-Fi Audio & MTS/SAP C. B. A.
Input Signal

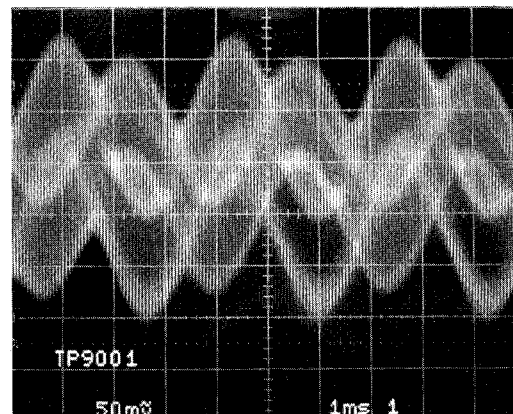


Fig. E15

Input Signal

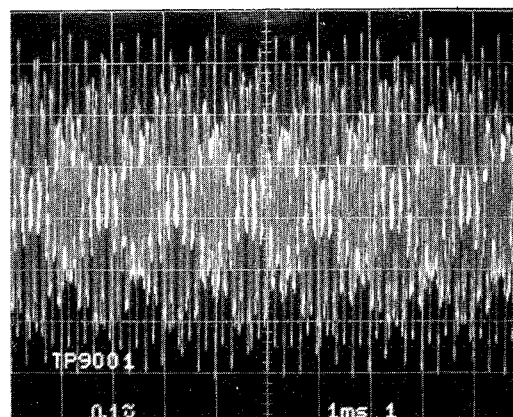


Fig. E16

1. Connect the Oscilloscope to Audio Out (R).
2. Adjust R9020 (LOW FREQUENCY) until the voltage reaches its minimum level.

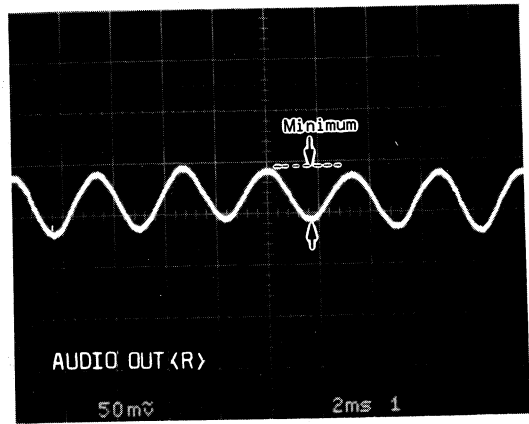
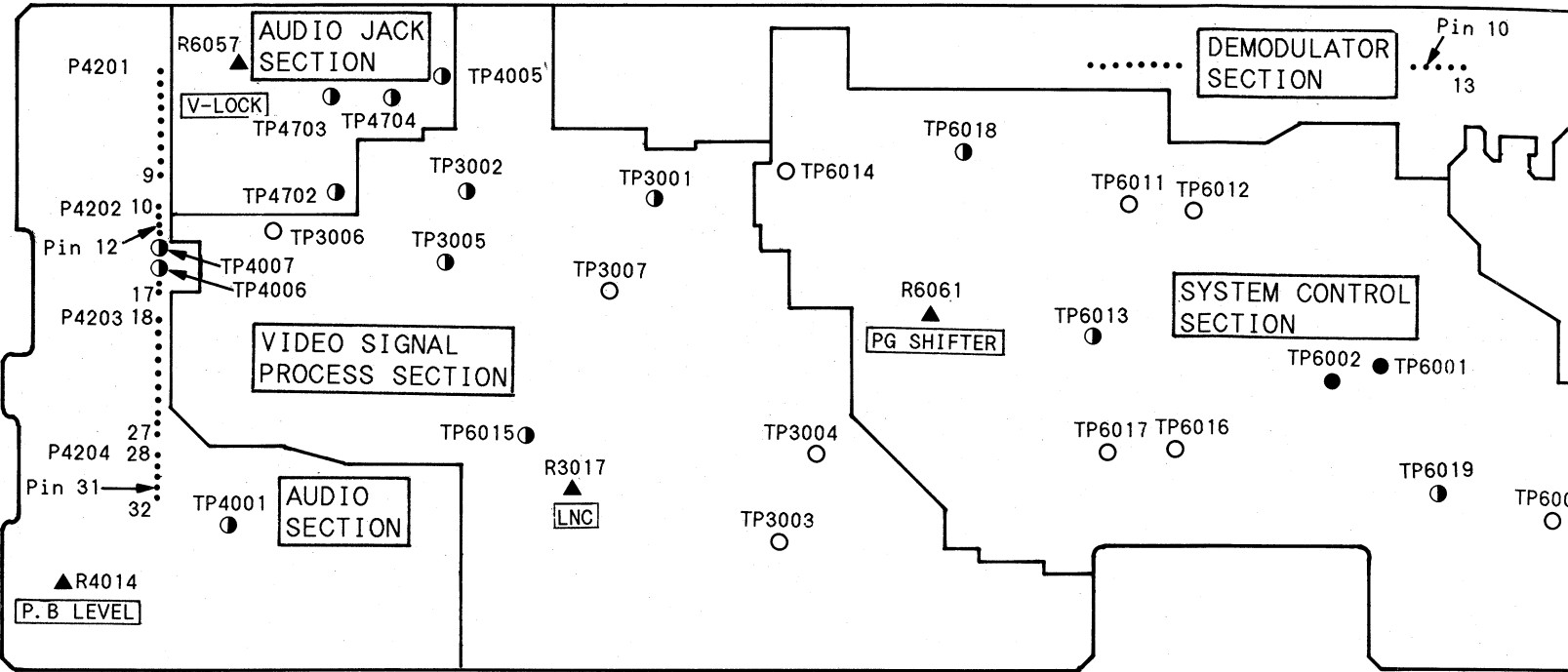


Fig. E17

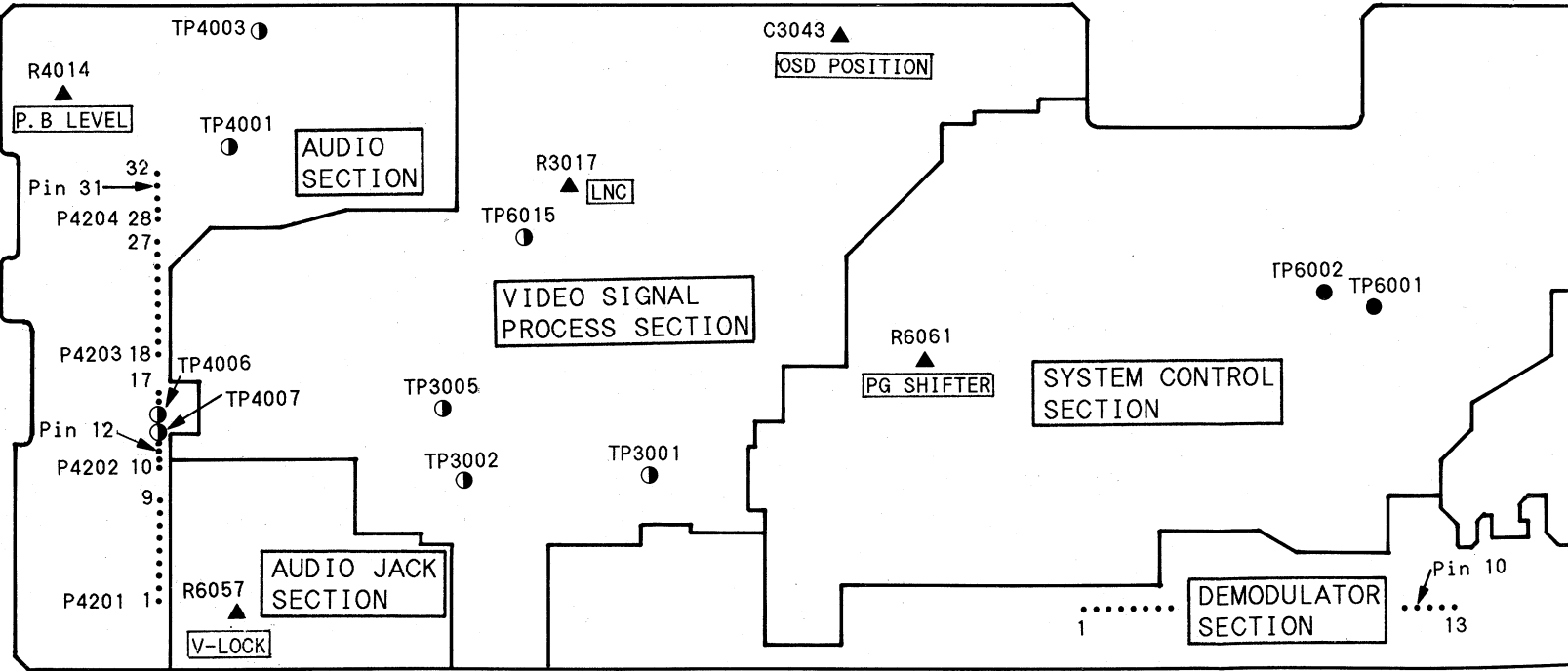
3. Change the RF Output Signal of MTS/SAP Signal Generator to MTS (ONLY L CH) 3KHz $\pm$ 50Hz.
4. Adjust R9018 (HIGH FREQUENCY) until the voltage reaches its minimum level.

Location of Test Points and Adjustment Points

Main C.B.A.



In Demodulator Section the 13 Pins are the UHF/VHF Tuner/TV Demodulator ASS'Y



TEST POINT INFORMATION

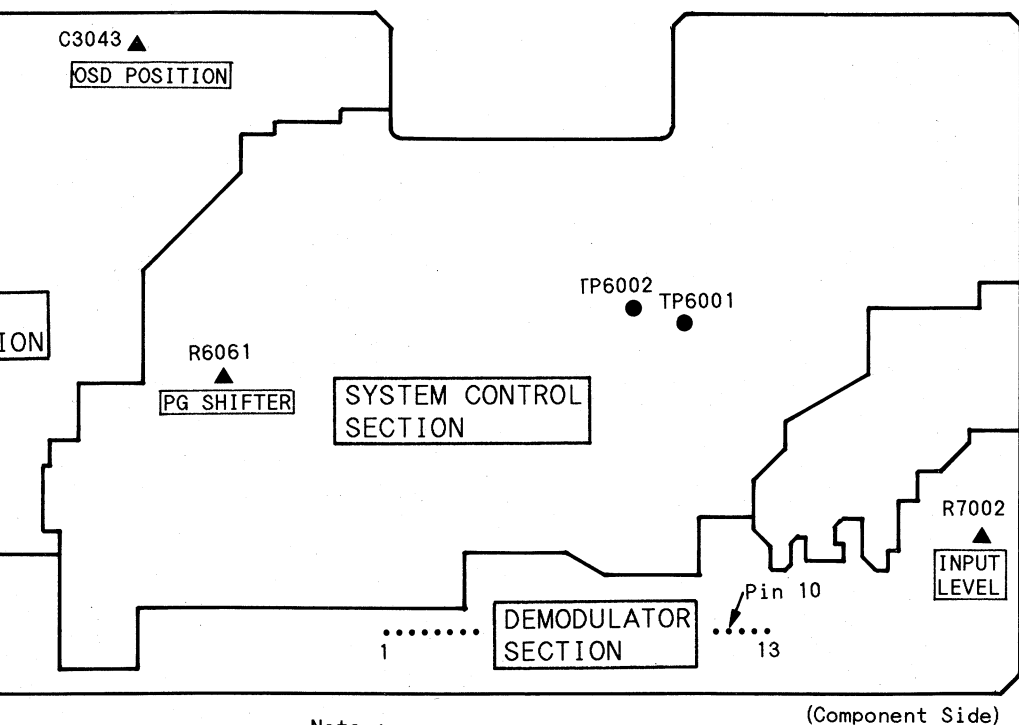
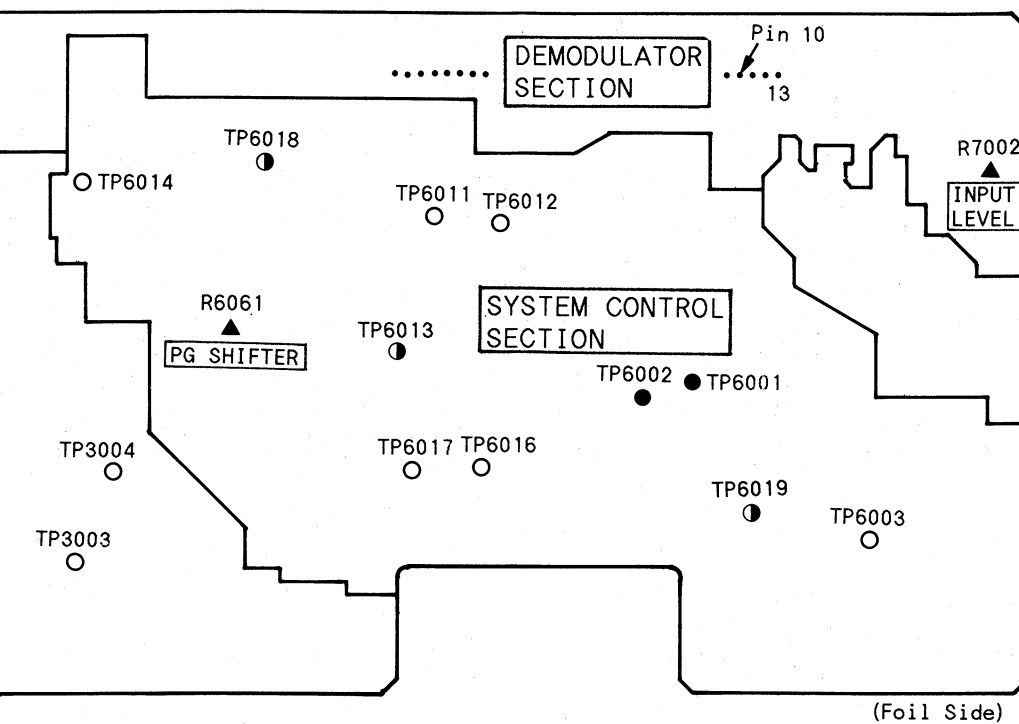
- : USED FOR THE INDICATION OF TEST POINT WITH TEST PIN
- : USED FOR THE INDICATION OF TEST POINT WITH NO TEST PIN
- ⦿ : USED FOR THE INDICATION OF TEST POINT WITH COMPONENT LEAD

Note :

Some of these TPs are positioned differentl Component and Foil Side but they are on the signal path.

Test Points and Adjustment Points

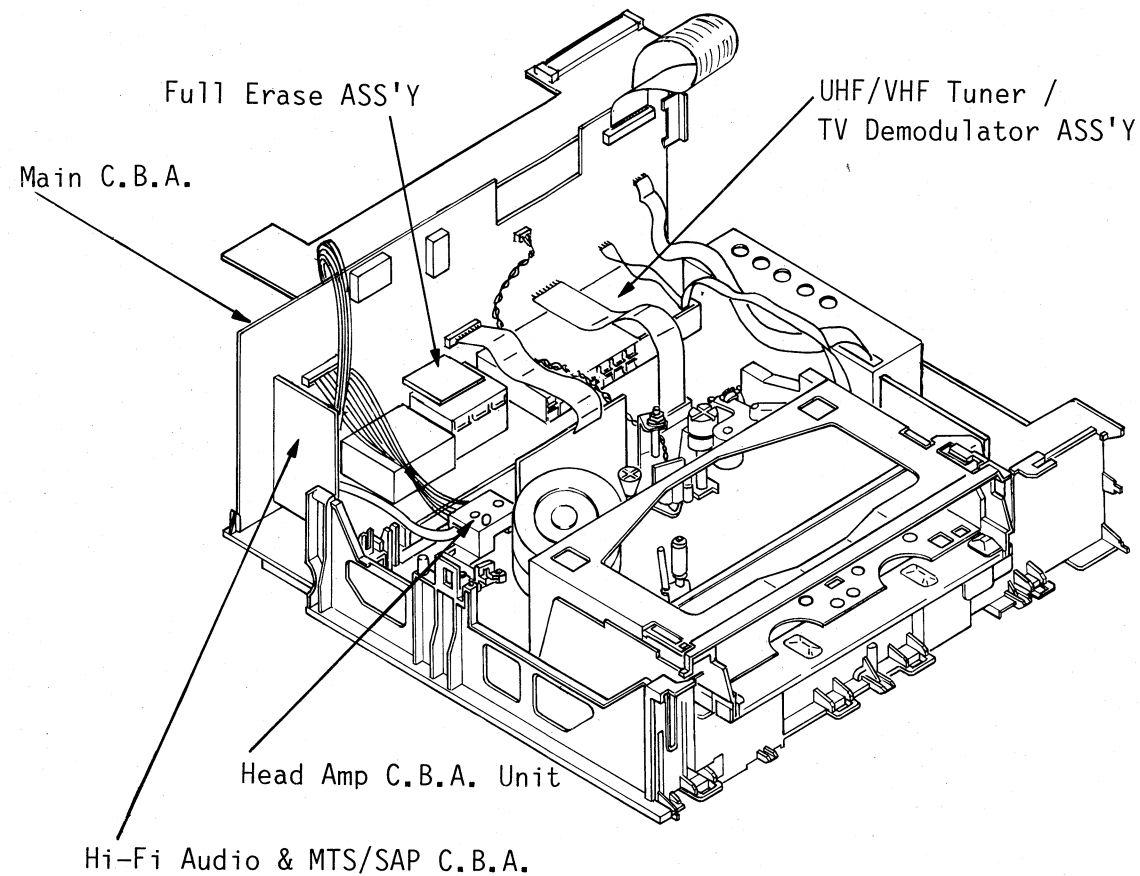
Main C.B.A.



Note :
Some of these TPs are positioned differently between Component and Foil Side but they are on the same signal path.

LEADED COMPONENTS LOCATION CHART FOR MAIN C.B.A.

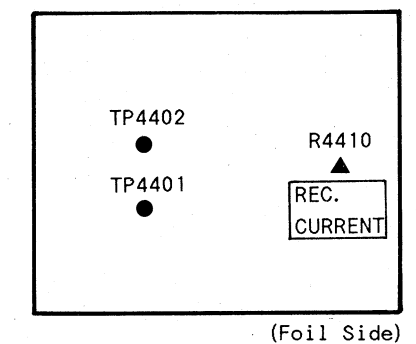
TP	COMPONENT LEAD (Foil Side)
TP3001	W260
TP3002	W137
TP3005	Pin 33 of IC3001
TP4001	Pin 21 of IC4001
TP4005	Audio In Jack (R)
TP6013	C6021
TP6015	Pin 25 of IC3001
TP6018	Pin 4 of IC6003
TP6019	R6114
TP4006	Pin 15 of P4202
TP4007	Pin 14 of P4202
TP4702	R4707
TP4703	Audio Out Jack (L)
TP4704	Audio Out Jack (R)



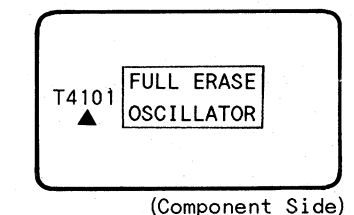
LEADED COMPONENTS LOCATION CHART FOR UHF/VHF TUNER/TV DEMODULATOR ASS'Y

TP	COMPONENT LEAD (Foil Side)
TP701	C708 (+)
TP703	C705 (+)
TP706	R712
TP708	FL1

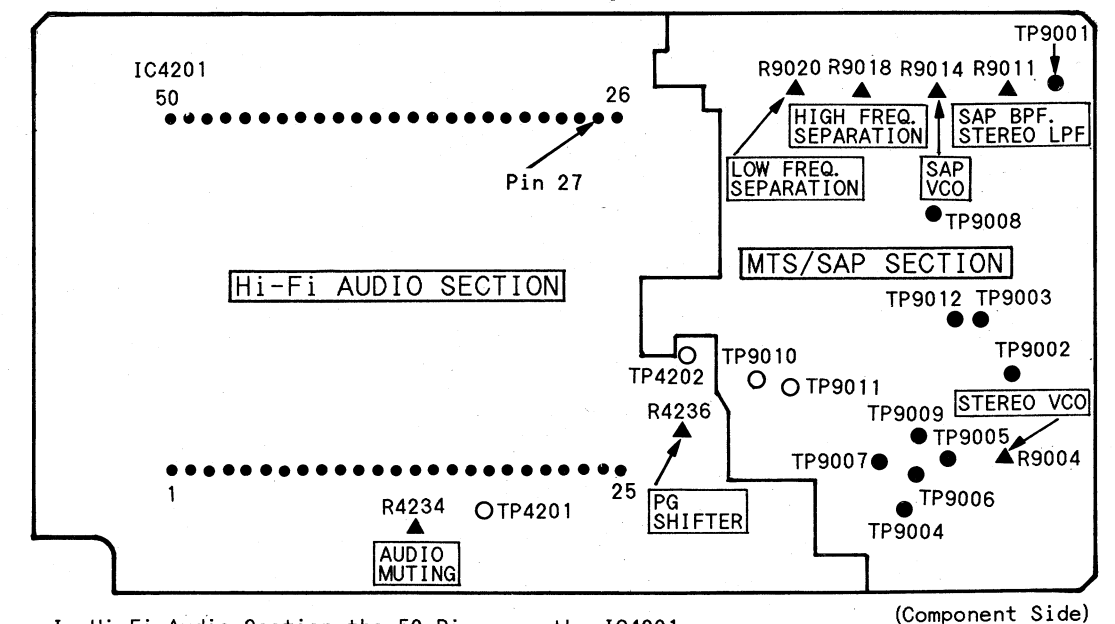
Head Amp C.B.A. Unit



Full Erase ASS'Y



Hi-Fi Audio & MTS/SAP C.B.A.



In Hi-Fi Audio Section the 50 Pins are the IC4201.

MAIN I (POWER SUPPLY/SERVO/SYSTEM CONTROL)/SMALL CIRCUIT BOARDS SCHEMATIC DIAGRA

NOTE: HOW TO READ CONVERGED LINES
(100)B4
LOCATION GRID OF THE OTHER LINE NUMBER

POWER SUPPLY SECTION	
TRANSISTOR	
Q1201	O-2
Q1202	O-3
CONNECTOR	
P1201	Q-4

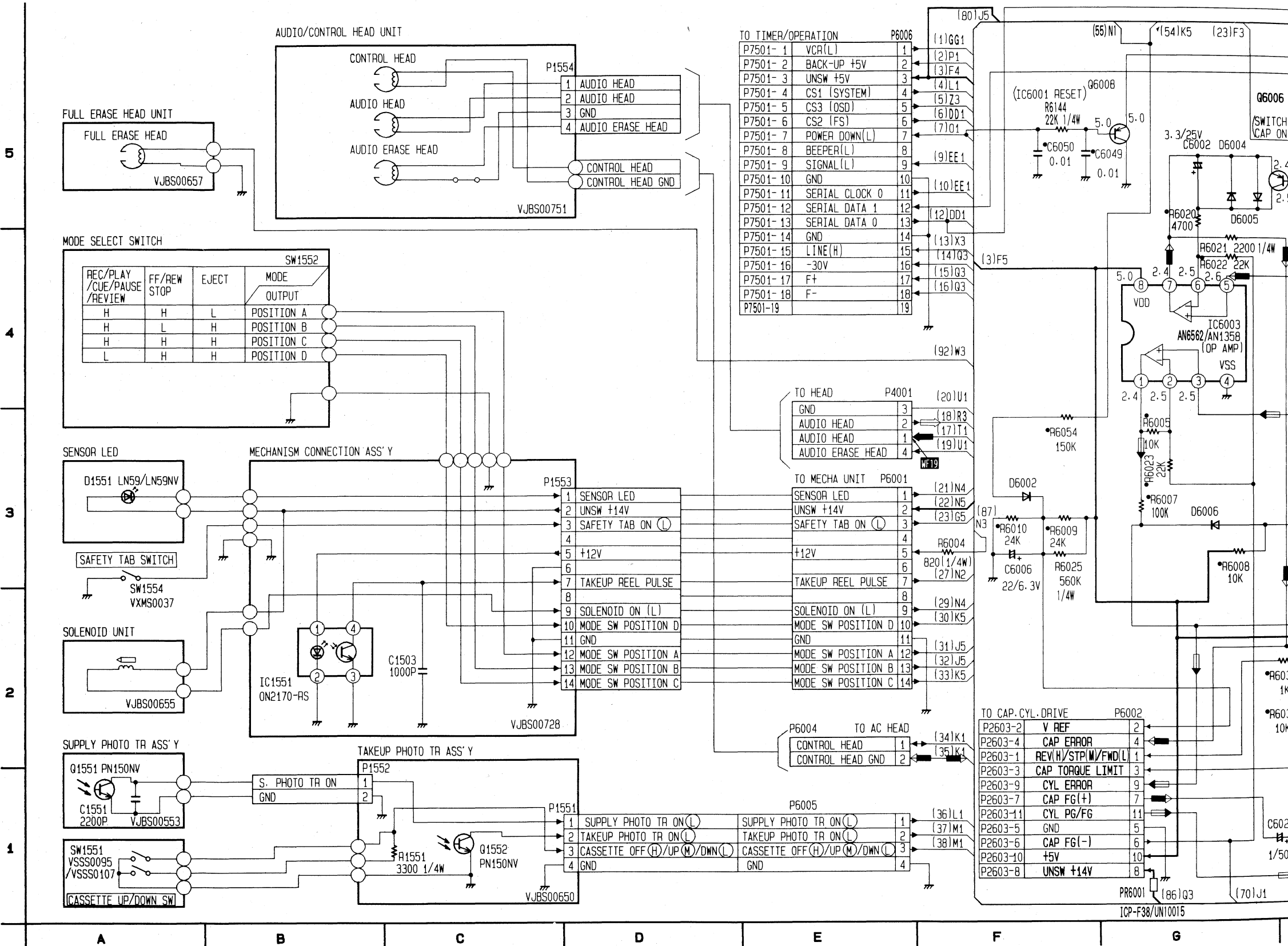
SERVO/SYSTEM CONTROL SECTION	
TRANSISTOR	
Q6002	N-5
Q6003	O-5
Q6004	O-4
Q6005	O-4
Q6006	G-5
Q6008	G-5
Q6009	H-5
Q6010	I-5
Q6011	H-5
Q6012	P-2
Q6013	Q-1
Q6014	P-1
Q6015	P-2
Q6017	Q-1

IC	
IC6001	K-3
IC6003	G-4
IC6004	N-2

CONNECTOR	
P6001	E-3
P6002	G-2
P6004	E-2
P6005	E-1
P6006	E-5
P6009	M-5
P6012	Q-5

TEST POINT	
TP6001	K-5
TP6002	L-5
TP6003	L-2
TP6011	I-4
TP6012	I-4
TP6013	I-1
TP6014	J-1
TP6015	BB-5
TP6016	K-1
TP6017	L-1
TP6018	H-3
TP6019	L-3

ADJUSTMENT	
R6057	I-1
R6061	I-1



CONTROL)/SMALL CIRCUIT BOARDS SCHEMATIC DIAGRAM

NOTE: HOW TO READ CONVERGED LINES

(100)B4

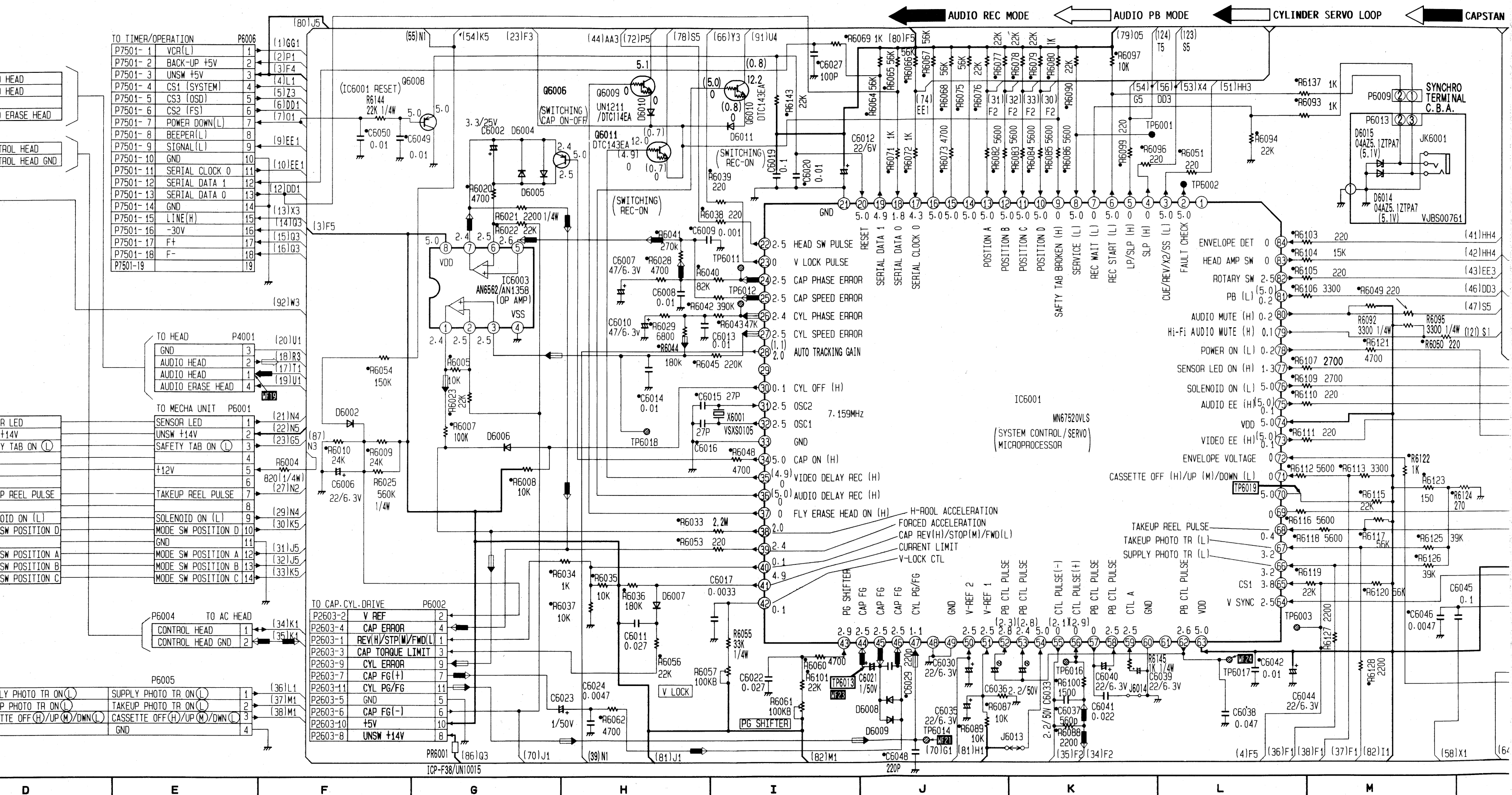
LOCATION GRID OF THE OTHER END OF THE LINE

LINE NUMBER

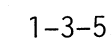
NOTE: MARK "●" IS LEADLESS
(CHIP) COMPONENT.

NOTE:

1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE C IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE TH
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY U WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION O



IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.

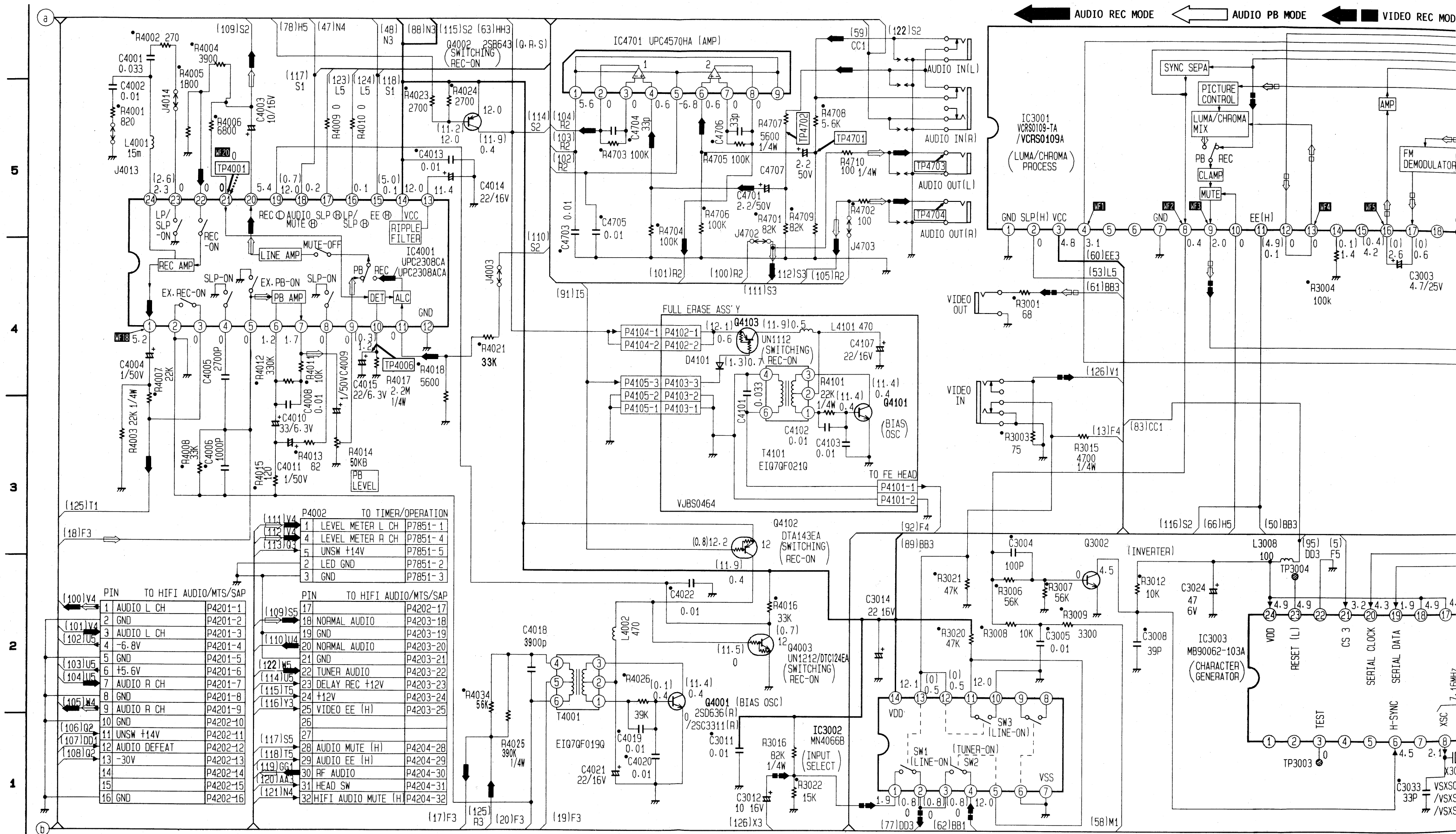


MAIN II (AUDIO/SIGNAL PROCESS) SCHEMATIC DIAGRAM

NOTE: HOW TO READ CONVERGED LINES

(100)B4
LOCATION GRID OF THE OTHER END OF THE LINE
LINE NUMBER

← AUDIO REC MODE ← AUDIO PB MODE ← VIDEO REC MOD



)B4
 — LOCATION GRID OF THE OTHER END OF THE LINE
 — LINE NUMBER

NOTE:

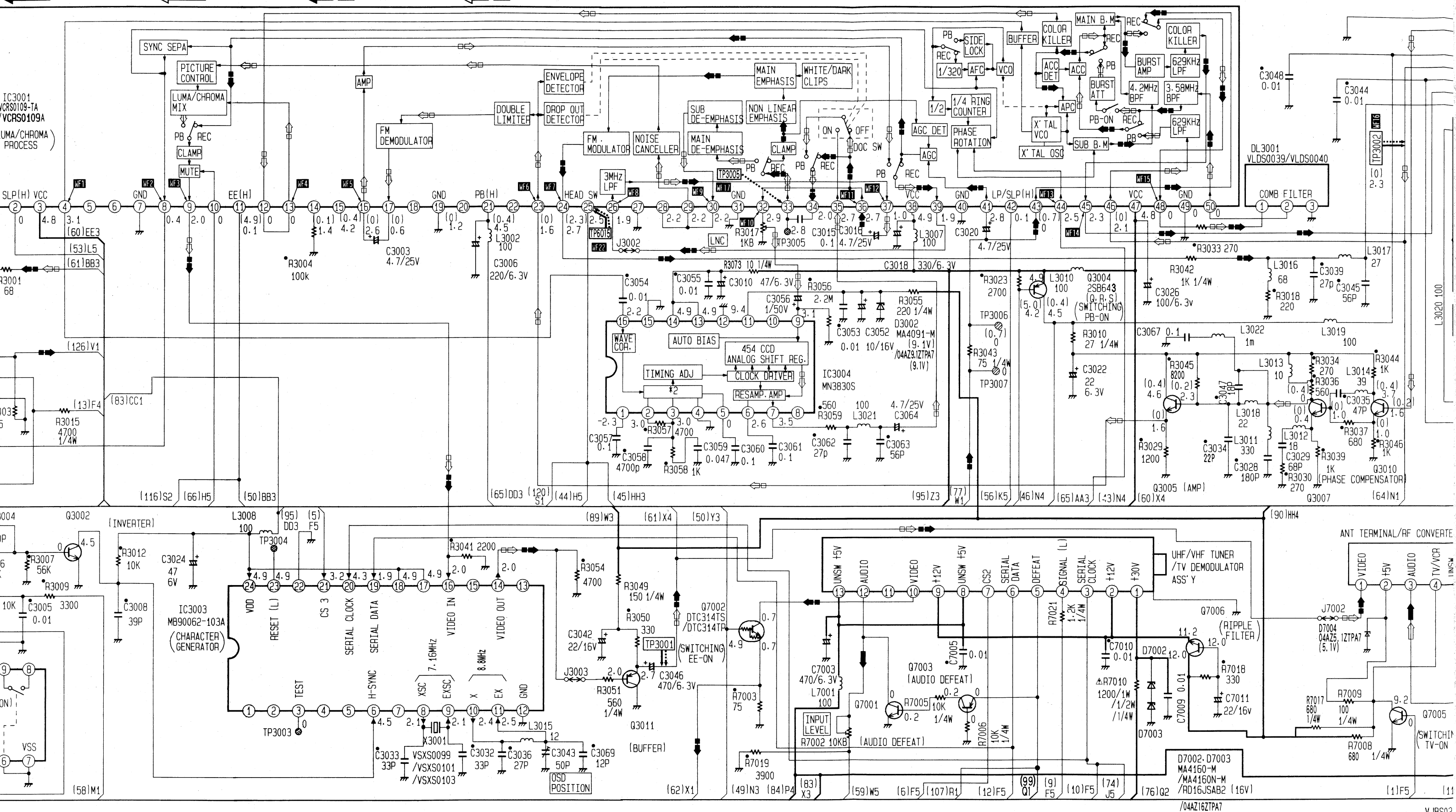
1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

IMPORTANT
COMPONENT
SPECIAL
WHEN RE
ONLY TH

 AUDIO REC MODE
 AUDIO PB MODE

 VIDEO REC MODE

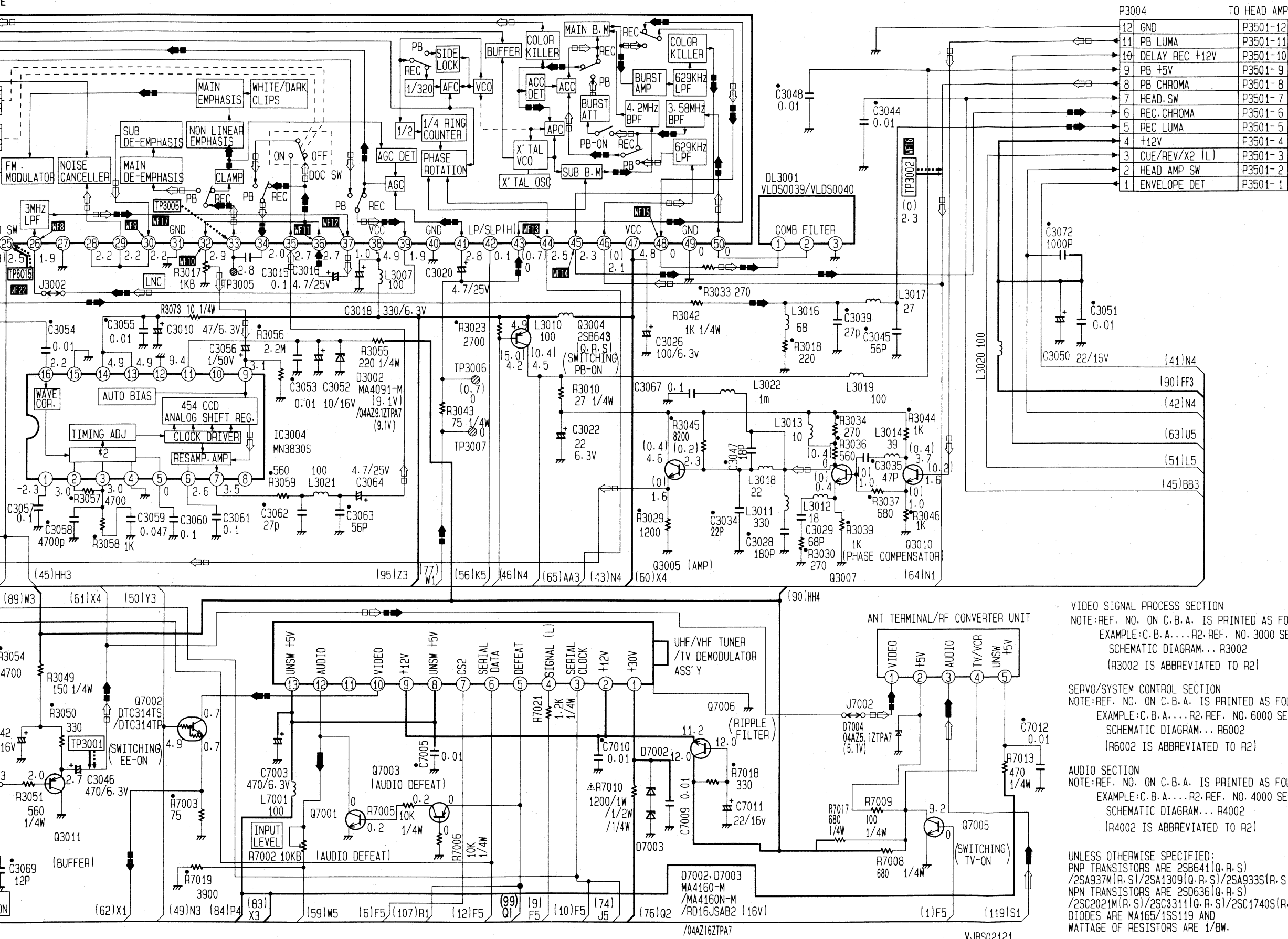
 VIDEO PB MODE



X	Y	Z	AA	BB	CC	DD	EE	FF	GG
---	---	---	----	----	----	----	----	----	----

1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.
WHEN REPLACING ANY OF THESE COMPONENTS, USE
ONLY THE SPECIFIED PARTS.



DEMODULATOR SECTION	
TRANSISTOR	
Q7001	CC-1
Q7002	BB-2
Q7003	DD-1
Q7005	GG-1
Q7006	FF-2
ADJUSTMENT	
R7002	CC-1

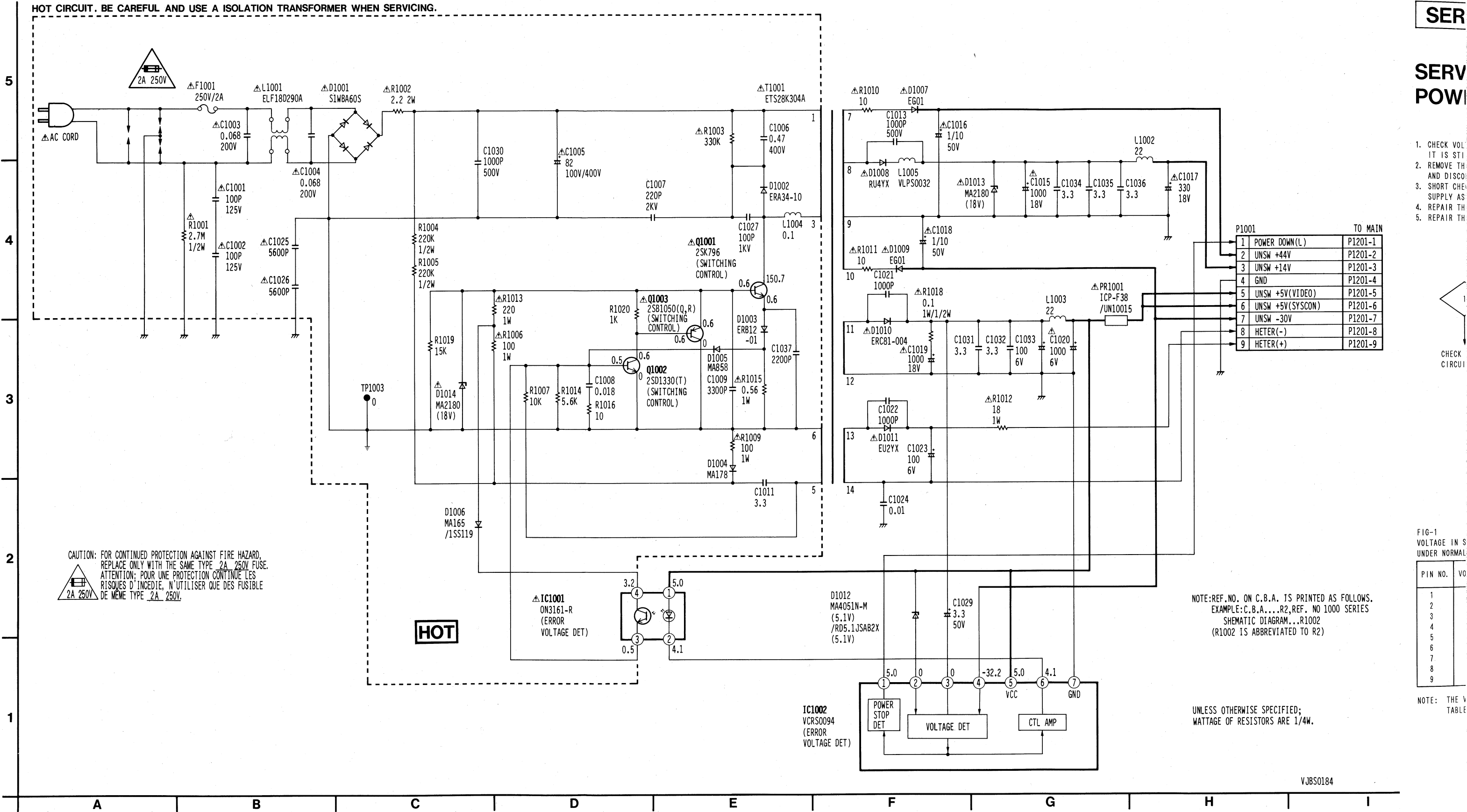
AUDIO SECTION	
TRANSISTOR	
Q4001	V-2
Q4002	T-5
Q4003	V-2
Q4102	V-3
IC	
IC4001	T-4
CONNECTOR	
P4001	E-4
P4002	S-3
P4104	U-4
P4105	U-4
TEST POINT	
TP4001	S-5
TP4006	T-4
ADJUSTMENT	
R4014	T-3

UNLESS OTHERWISE SPECIFIED:
PNP TRANSISTORS ARE 2SB641(Q,R,S)
/2SA937M(R,S)/2SA1309(Q,R,S)/2SA933S(R,S)
NPN TRANSISTORS ARE 2SD636(Q,R,S)
/2SC2021M(R,S)/2SC3311(Q,R,S)/2SC1740S(R,S).
DIODES ARE MA165/1SS119 AND
WATTAGE OF RESISTORS ARE 1/8W.

POWER SUPPLY SCHEMATIC DIAGRAM

IMPORTANT SAFETY NOTICE:
COMPONENTS IDENTIFIED BY THE SIGN  HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY. WHEN REPLACING ANY OF THESE COMPONENTS, USE ONLY THE SPECIFIED PARTS.

- NOTE:
- 1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THE PARTS LIST IS THE FINAL AUTHORITY.
 - 2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, CIRCuits WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION.



NOTE:

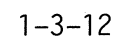
1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

SERVICE PROCEDURE FOR POWER SUPPLY ASS'Y

-
- ```
graph TD; 1{1} -- NO GOOD --> 2[2]; 1 -- GOOD --> C[CHECK OTHER CIRCUIT]; 2 --> 3{3}; 3 -- NO GOOD --> 4[4]; 3 -- GOOD --> 5[5]; 4 --> 5;
```

NOTE: 1. PIN 4 OF THE TERMINALS  
SHOULD BE GROUND IN  
THIS MEASUREMENT.  
2. RESISTANCE OF THIS TABLE  
ARE APPROX.

VJBS0184



◀ CAPSTAN SERVO ▶



1-3-14

S SHOWN  
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ENT PARTS

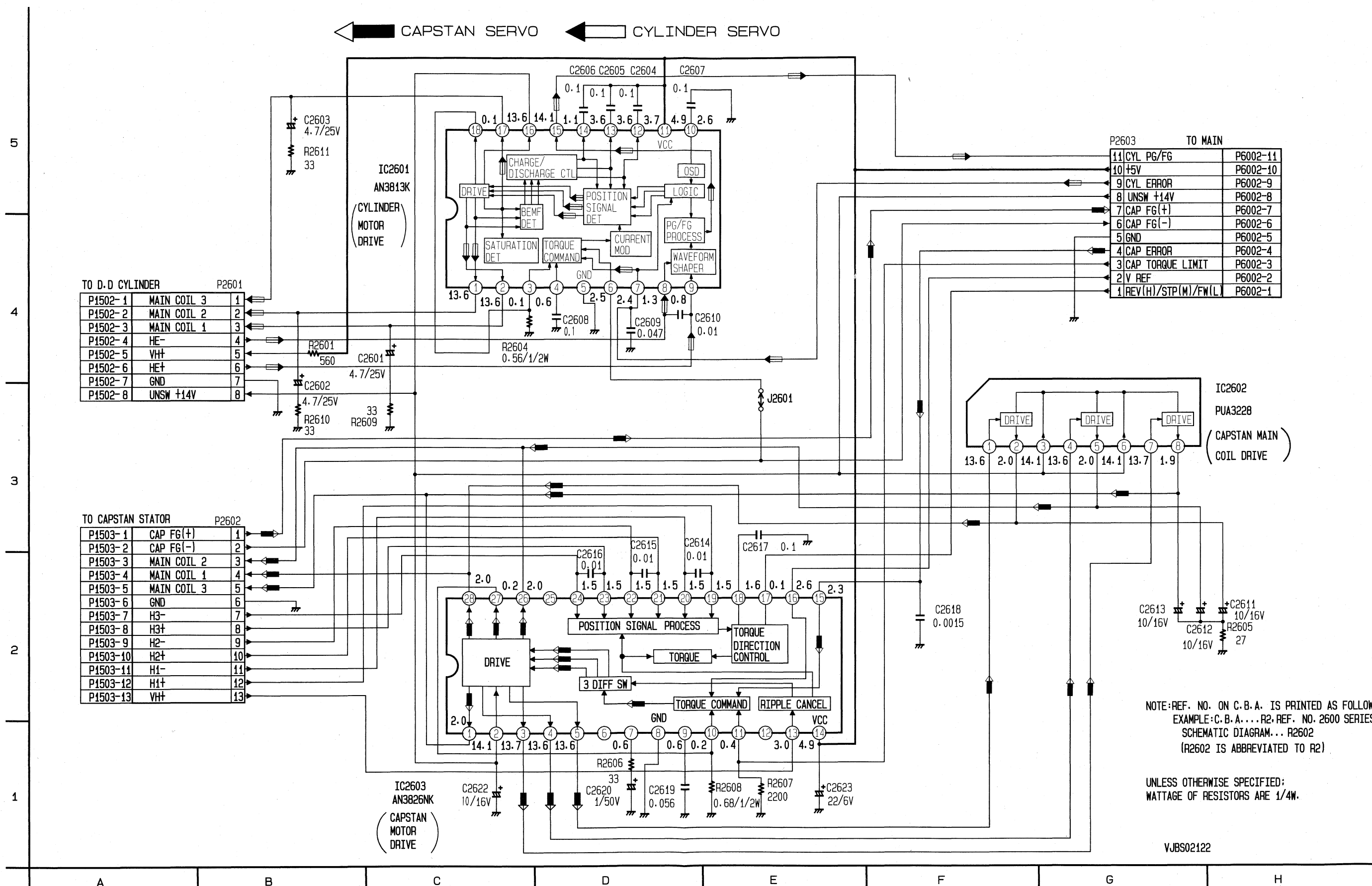
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DISTANCE  
THAN 500.Ω  
THAN 500.Ω  
THAN 30.Ω  
THAN 25.Ω  
THAN 25.Ω  
THAN 5K.Ω  
THAN 1.5K.Ω  
THAN 1.5K.Ω

OF THE TERMINALS  
BE GROUND IN  
ASUREMENT.  
NCE OF THIS TABLE  
PROX.

# CAPSTAN/CYLINDER MOTOR DRIVE SCHEMATIC DIAGRAM





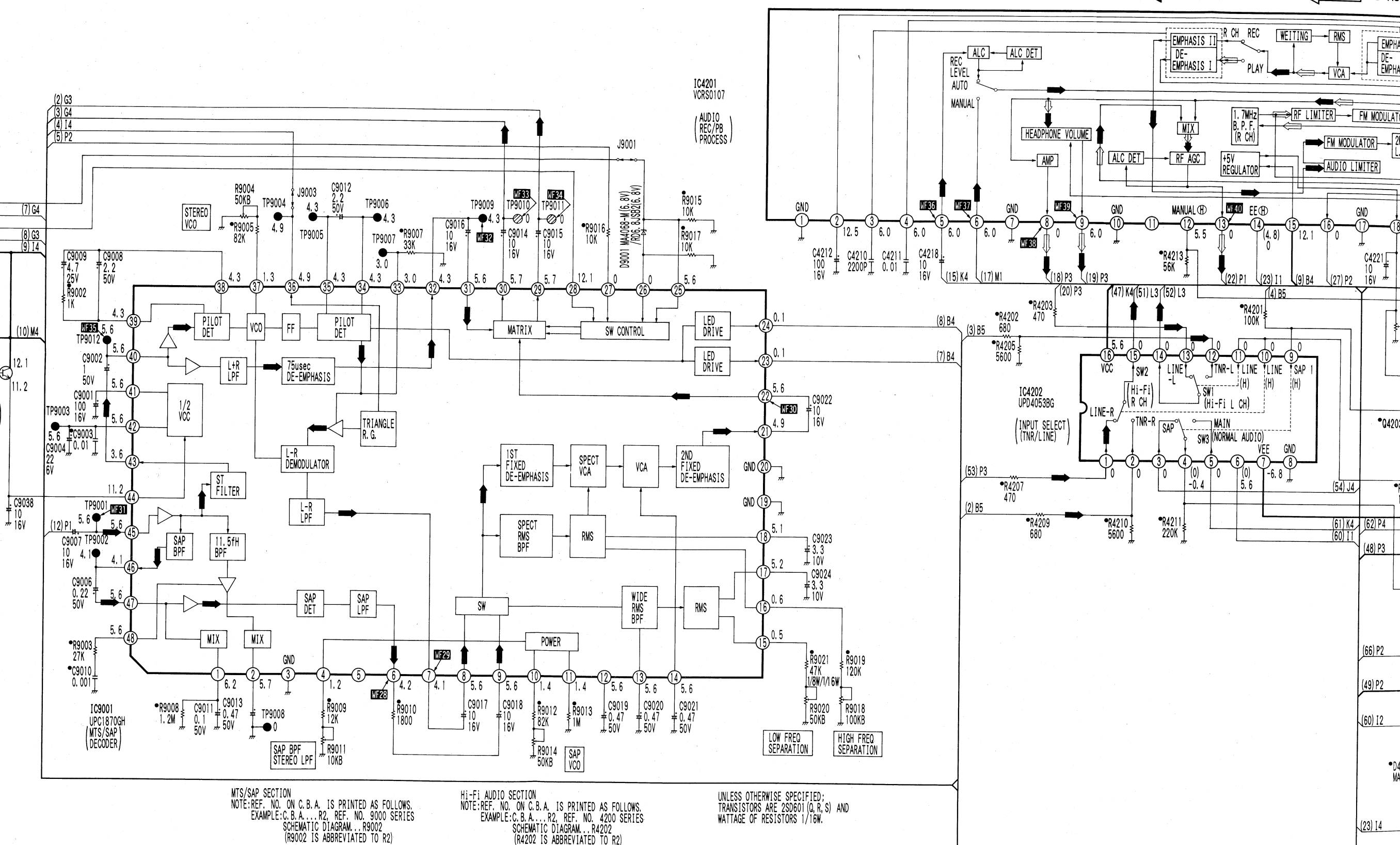
# Hi-Fi AUDIO/MTS/SAP SCHEMATIC DIAGRAM

NOTE: HOW TO READ CONVERGED LINES

(100)B4  
LOCATION GRID OF THE OTHER END OF THE LINE  
LINE NUMBER

REC MODE PB MO

| TO TIMER/OPERATION |                  | P9001 |
|--------------------|------------------|-------|
| P7802-1            | MAIN/SAP 1/SAP 2 | 1     |
| P7802-2            | SAP LED ON (L)   | 2     |
| P7802-3            | MONO (L)         | 3     |
| P7802-4            | MTS LED ON (L)   | 4     |
| P7802-5            | +12V             | 5     |
| P7802-6            | GND              | 6     |



NOTE: HOW TO READ CONVERGED LINES

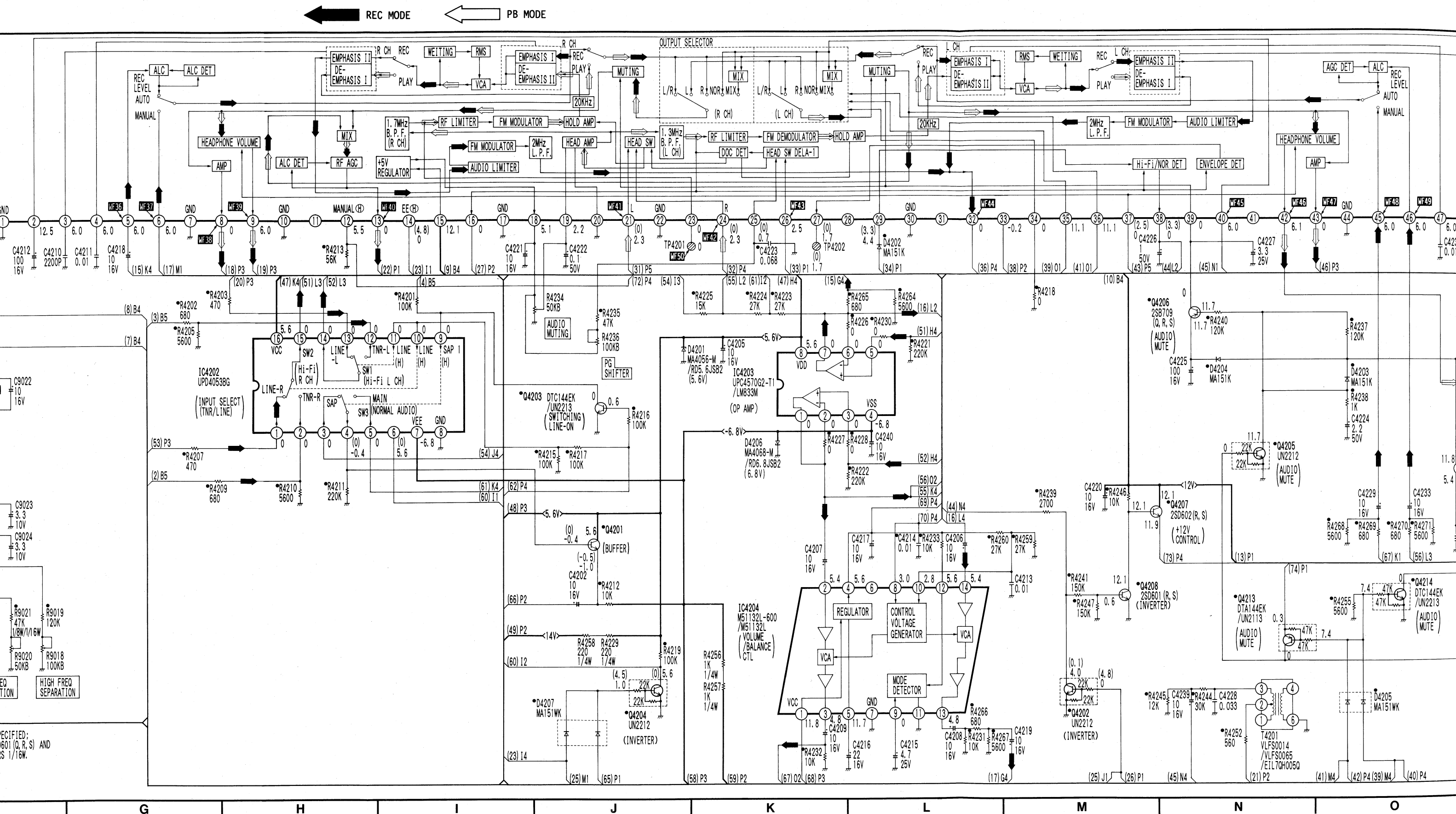
(100)B4

LOCATION GRID OF THE OTHER END OF THE LINE  
LINE NUMBER

NOTE: MARK "●" IS LEADLESS  
(CHIP) COMPONENT.

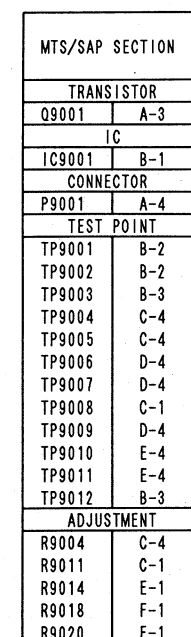
NOTE:

1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.





1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.



## TIMER/OPERATION I SCHEMATIC DIAGRAM

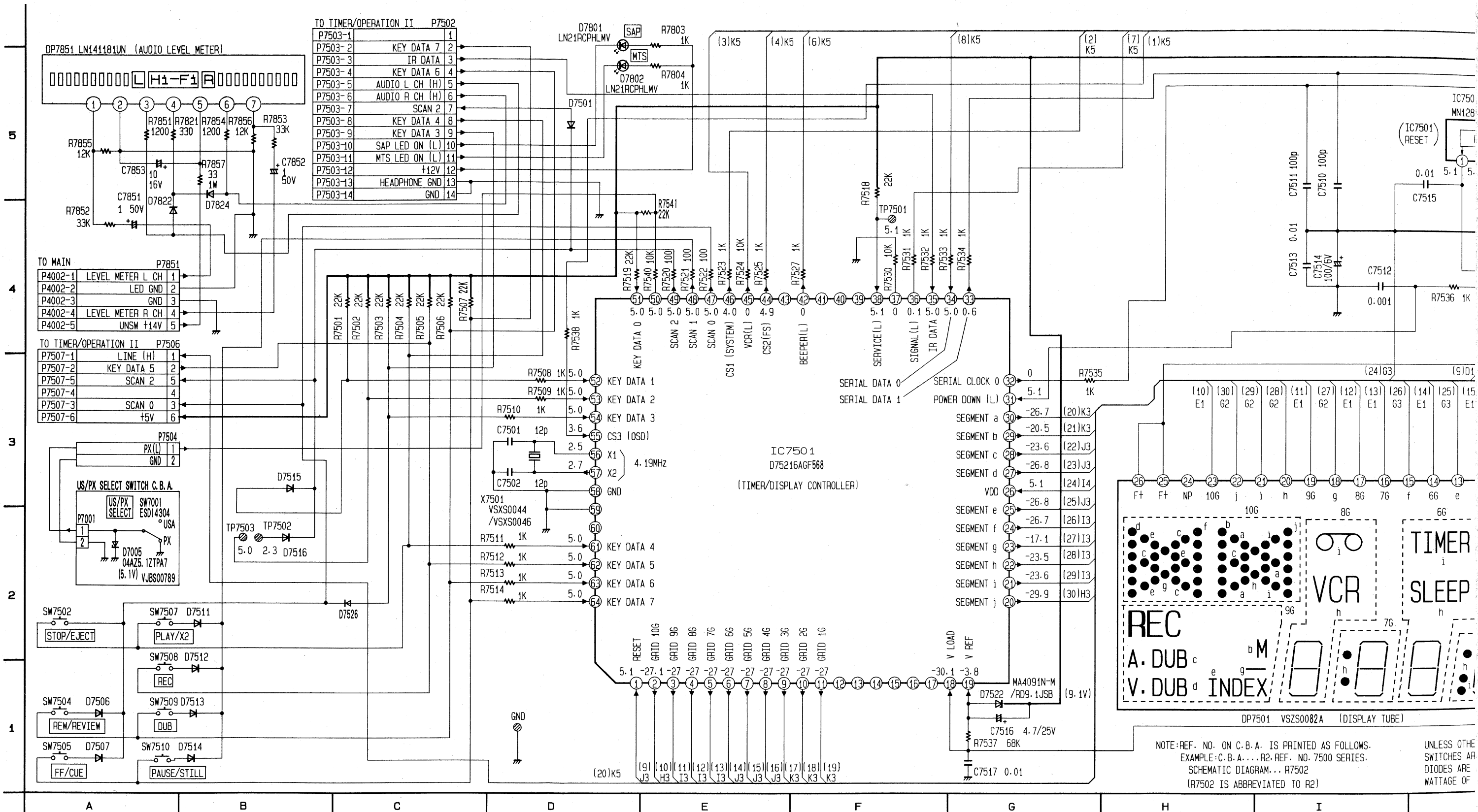
### NOTE: HOW TO READ CONVERGED LINES

(100)B.4

LOCATION GRID OF THE OTHER END OF THE LINE  
LINE NUMBER

NOTE:

1. DO NOT USE THE PART NUMBER SHOWN ON THE DRAWING OR PART NUMBER LISTED IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF THE PARTS WHICH ARE LISTED WITH THEIR PART NUMBER.



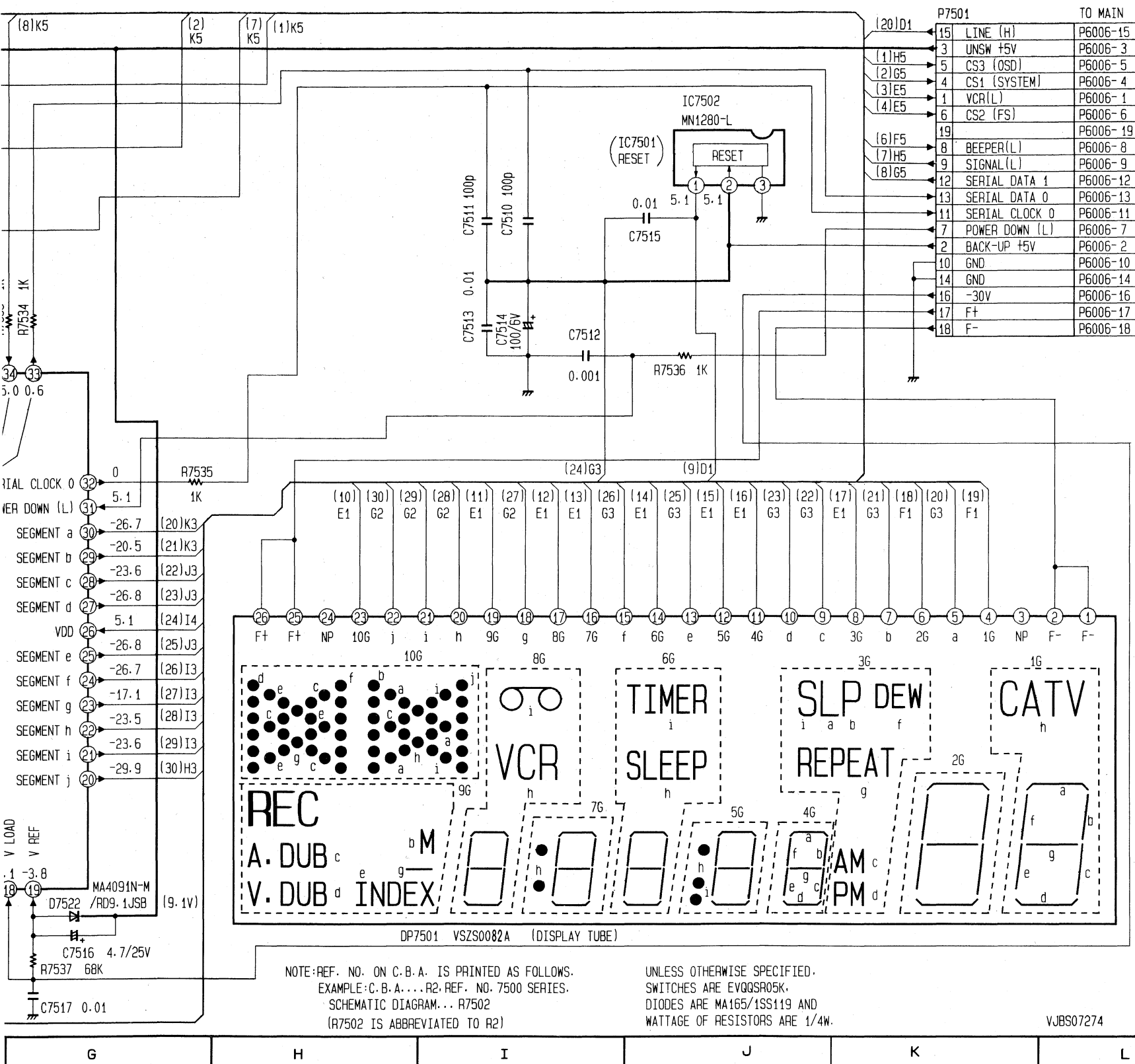
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.  
EXAMPLE: C.B.A....R2, REF. NO. 7500 SERIES.  
SCHEMATIC DIAGRAM... R7502  
(R7502 IS ABBREVIATED TO R2)

UNLESS OTHER  
SWITCHES ARE  
DIODES ARE  
WATTAGE OF

NOTE:

1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

THE OTHER END OF THE LINE



IC7501 KEY MATRIX CHART

| KEY DATA IN            | SCAN OUT           |                    |                    |
|------------------------|--------------------|--------------------|--------------------|
|                        | SCAN 0<br>(PIN 47) | SCAN 1<br>(PIN 48) | SCAN 2<br>(PIN 49) |
| KEY DATA 0<br>(PIN 51) | ----               | ----               | ----               |
| KEY DATA 1<br>(PIN 52) | ----               | ----               | ----               |
| KEY DATA 2<br>(PIN 53) | ----               | ----               | ----               |
| KEY DATA 3<br>(PIN 54) | ----               | ----               | LINE               |
| KEY DATA 4<br>(PIN 61) | STOP/EJECT         | PLAY/X2            | ----               |
| KEY DATA 5<br>(PIN 62) | POWER              | REC                | TV/VCR             |
| KEY DATA 6<br>(PIN 63) | REW/REVIEW         | DUB                | CH UP              |
| KEY DATA 7<br>(PIN 64) | FF/CUE             | PAUSE/STILL        | CH DOWN            |

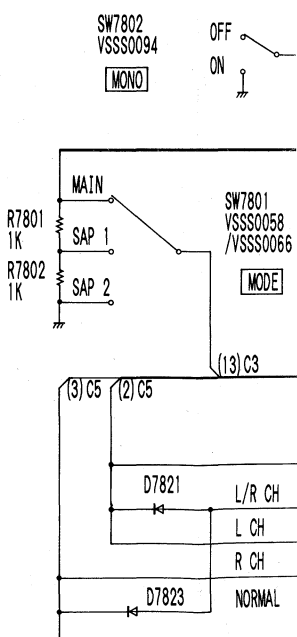
5

4

3

2

1

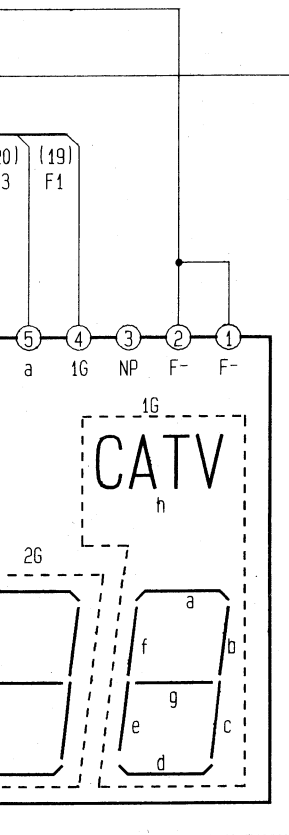


THE CORRECT PART NUMBER IS SHOWN  
THIS DRAWING WAS PREPARED.  
ONLY USE ORIGINAL REPLACEMENT PARTS  
ON OF THE SERVICE MANUAL.

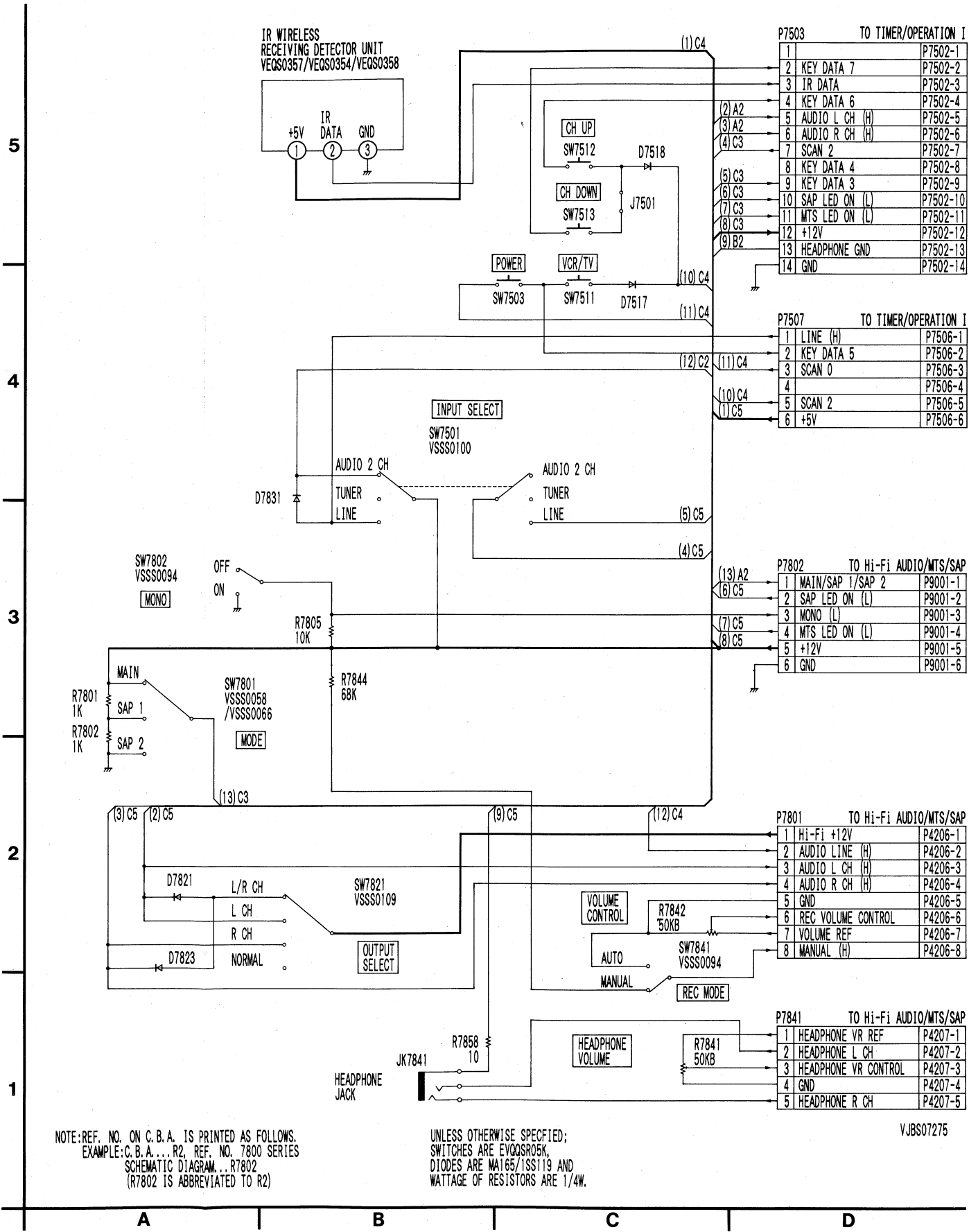
| P7501 TO MAIN     |          |
|-------------------|----------|
| 15 LINE (H)       | P6006-15 |
| 3 UNSW +5V        | P6006-3  |
| 5 CS3 (OSD)       | P6006-5  |
| 4 CS1 (SYSTEM)    | P6006-4  |
| 1 VCR(L)          | P6006-1  |
| 6 CS2 (FS)        | P6006-6  |
| 19                | P6006-19 |
| 8 BEEPER(L)       | P6006-8  |
| 9 SIGNAL(L)       | P6006-9  |
| 12 SERIAL DATA 1  | P6006-12 |
| 13 SERIAL DATA 0  | P6006-13 |
| 11 SERIAL CLOCK 0 | P6006-11 |
| 7 POWER DOWN (L)  | P6006-7  |
| 2 BACK-UP +5V     | P6006-2  |
| 10 GND            | P6006-10 |
| 14 GND            | P6006-14 |
| 16 -30V           | P6006-16 |
| 17 F+             | P6006-17 |
| 18 F-             | P6006-18 |

IC7501 KEY MATRIX CHART

| KEY DATA IN            | SCAN OUT           |                    |                    |
|------------------------|--------------------|--------------------|--------------------|
|                        | SCAN 0<br>(PIN 47) | SCAN 1<br>(PIN 48) | SCAN 2<br>(PIN 49) |
| KEY DATA 0<br>(PIN 51) | ----               | ----               | ----               |
| KEY DATA 1<br>(PIN 52) | ----               | ----               | ----               |
| KEY DATA 2<br>(PIN 53) | ----               | ----               | ----               |
| KEY DATA 3<br>(PIN 54) | ----               | ----               | LINE               |
| KEY DATA 4<br>(PIN 61) | STOP/EJECT         | PLAY/X2            | ----               |
| KEY DATA 5<br>(PIN 62) | POWER              | REC                | TV/VCR             |
| KEY DATA 6<br>(PIN 63) | REW/REVIEW         | DUB                | CH UP              |
| KEY DATA 7<br>(PIN 64) | FF/CUE             | PAUSE/STILL        | CH DOWN            |



TIMER/OPERATION II SCHEMATIC DIAGRAM



## UHF/VHF TUNER/TV DEMODULATOR SCHEMATIC DIAGRAM

NOTE: HOW TO READ CONVERGED LINES

(100)B4

—LOCATION GRID OF THE OTHER END OF THE LINE  
—LINE NUMBER

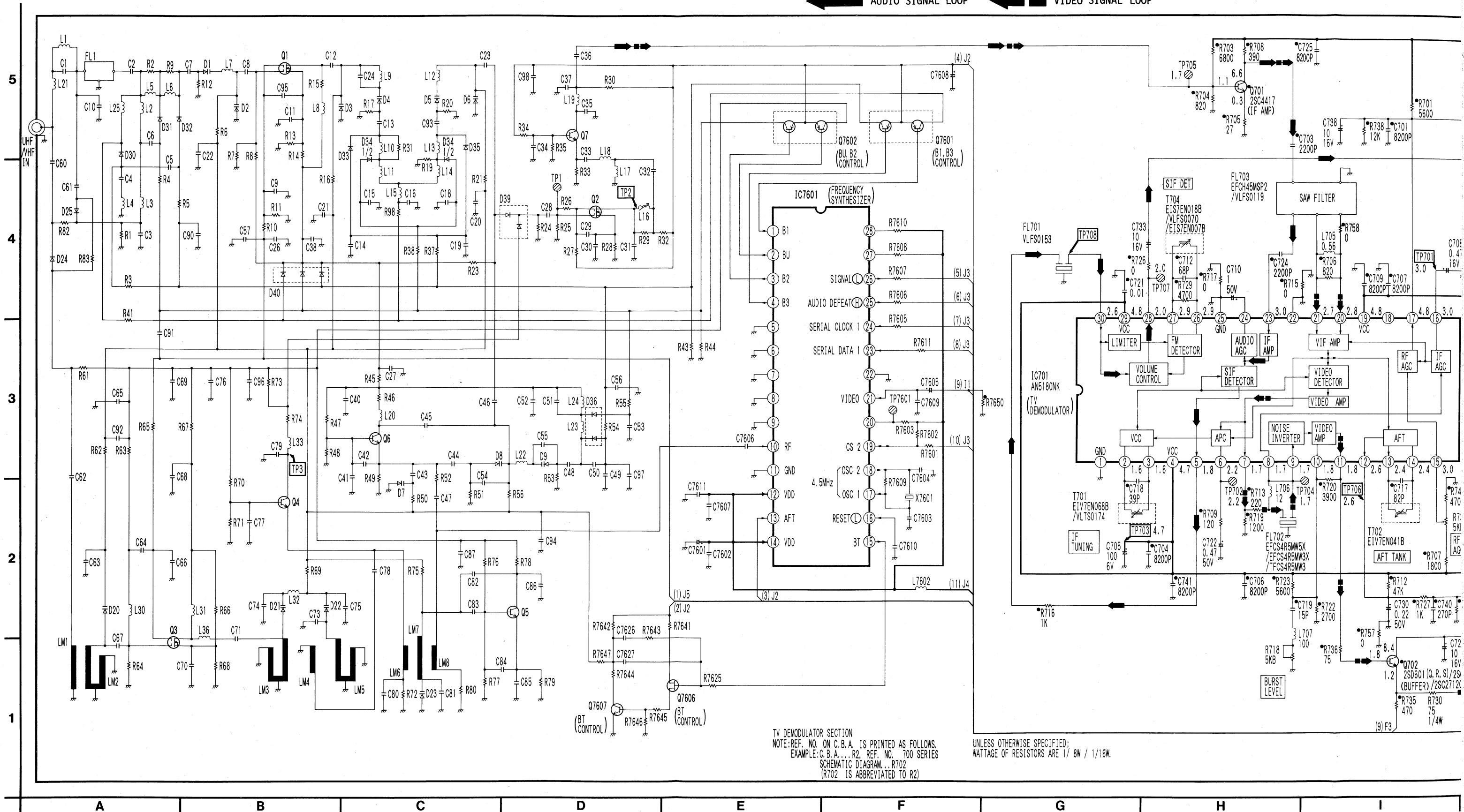
NOTE: MARK "●" IS LEADLESS  
(CHIP) COMPONENT.

NOTE:

1. DO NOT USE THE PART NUMBER IN THE PARTS LIST, AND
2. MAINTAIN ORIGINAL FUNCTION WHICH ARE LISTED WITH

## AUDIO SIGNAL LOOP

VIDEO SIGNAL LOOP



TV DEMODULATOR SECTION  
NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.  
EXAMPLE: C.B.A. ... R2, REF. NO. 700 SERIES  
SCHEMATIC DIAGRAM. . . R702  
(R702 IS ABBREVIATED TO R2)

UNLESS OTHERWISE SPECIFIED;  
WATTAGE OF RESISTORS ARE 1/ 8W / 1/16W.

# IC DIAGRAM

NOTE: HOW TO READ CONVERGED LINES

(100)B4  
LOCATION GRID OF THE OTHER END OF THE LINE  
LINE NUMBER

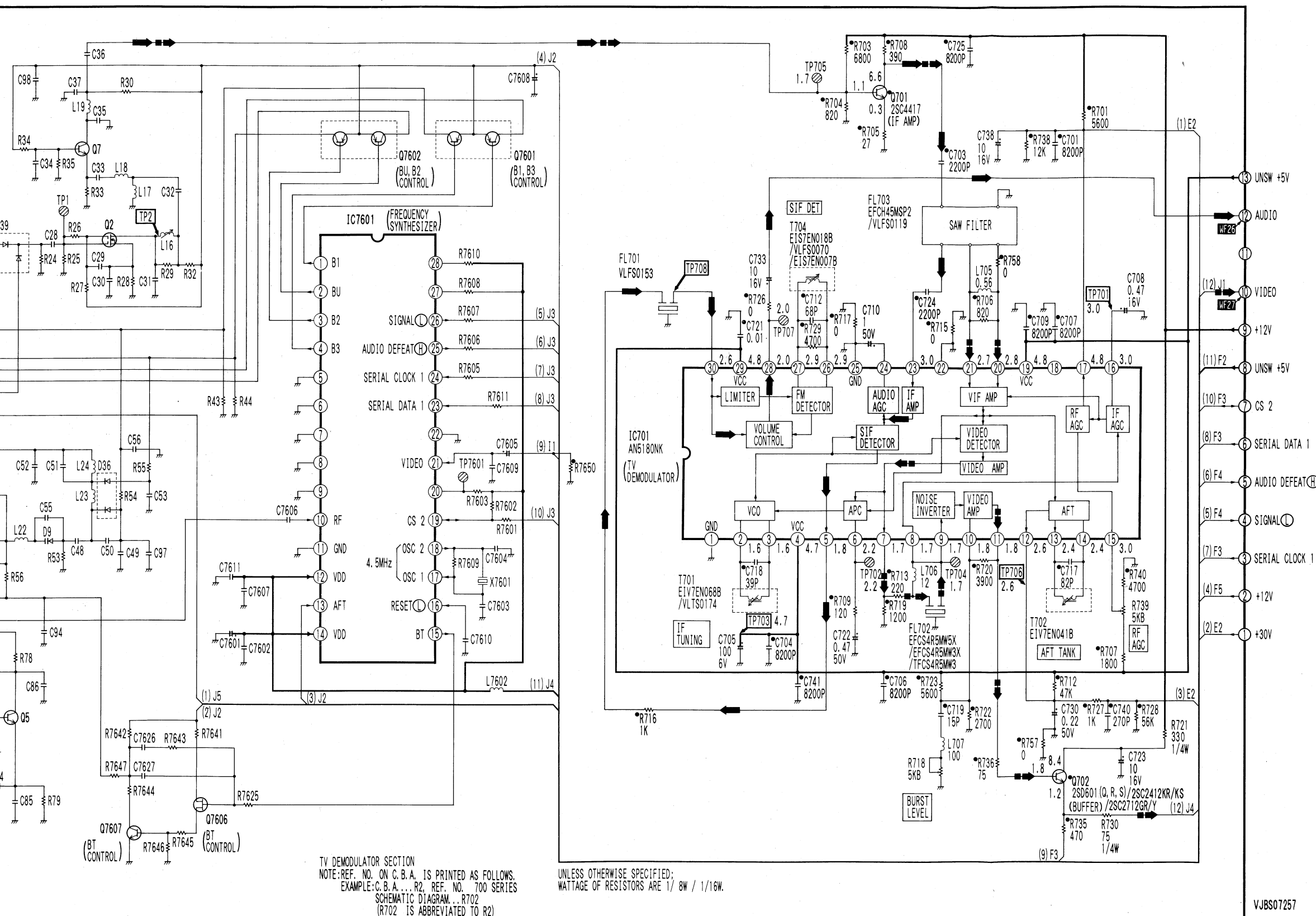
NOTE: MARK "●" IS LEADLESS  
(CHIP) COMPONENT.

NOTE:

- DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
- MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS. ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

AUDIO SIGNAL LOOP

VIDEO SIGNAL LOOP



**IMPORTANT NOTICE:**  
IF PARTS OF TUNER AND FS SECTION ARE  
REPLACED INDIVIDUALLY, THE FCC SPECIFICATIONS  
WILL NOT BE SATISFIED.  
DURING SERVICING, PLEASE REPLACE AS A UNIT.

## BAND SELECTION CHART

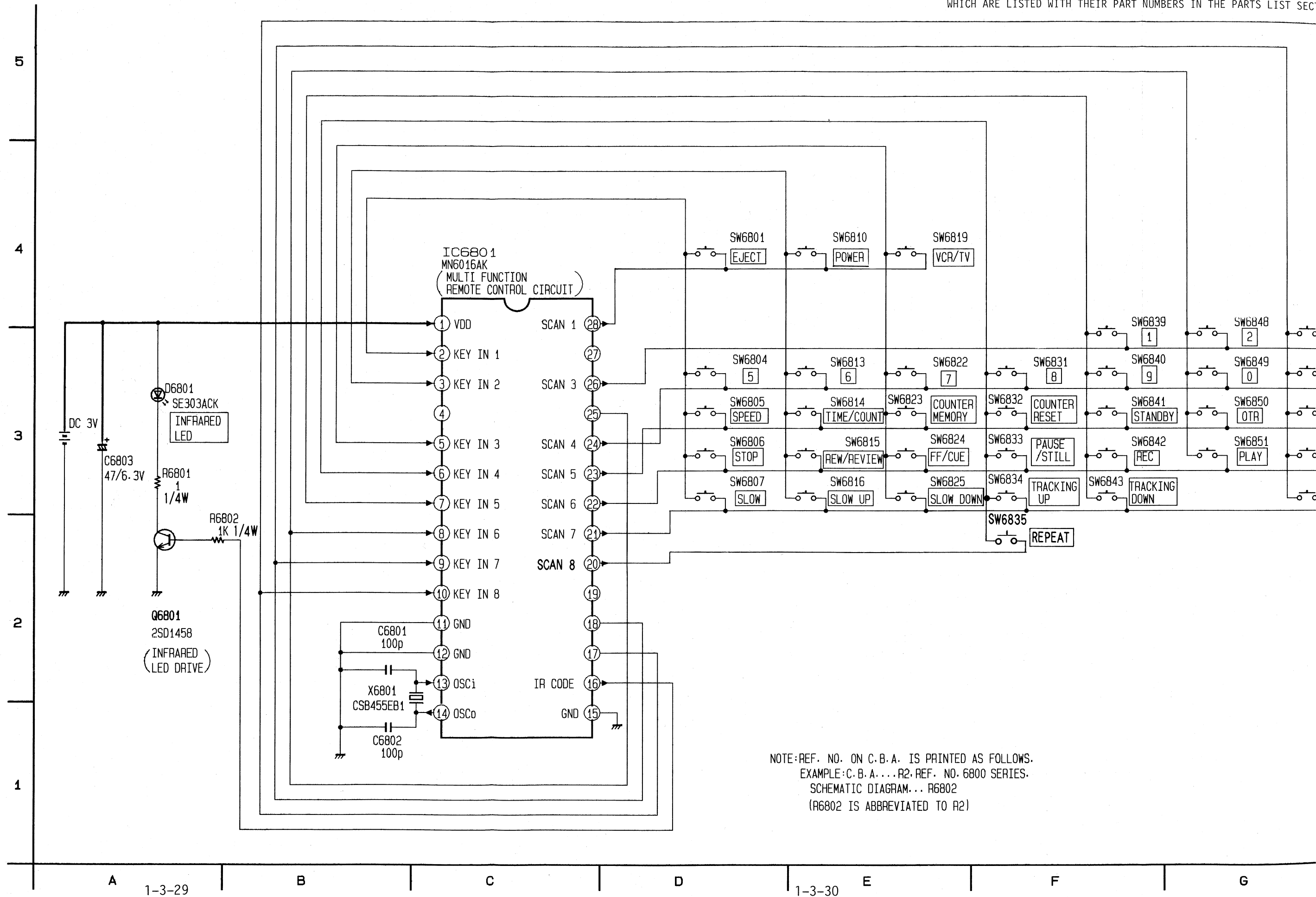
| B1   | B2    | B3  | BU  | CHANNEL                       |
|------|-------|-----|-----|-------------------------------|
| 12V  | 0V    | 0V  | 0V  | 2CH~6CH<br>5A, A-5~A-3        |
| 6V   | 12V   | 0V  | 0V  | 7CH~13CH<br>A~1, A-2, A-1     |
| 7.5V | 11.5V | 12V | 0V  | J~EEE                         |
| 0V   | 0V    | 0V  | 12V | 14CH~69CH<br>65CH~94CH (CATV) |

NOTE: THE VOLTAGES ARE APPROXIMATE.



# IR WIRELESS TRANSMITTER SCHEMATIC DIAGRAM

- NOTE:
1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THE PARTS LIST IS THE FINAL AUTHORITY.
  2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION.

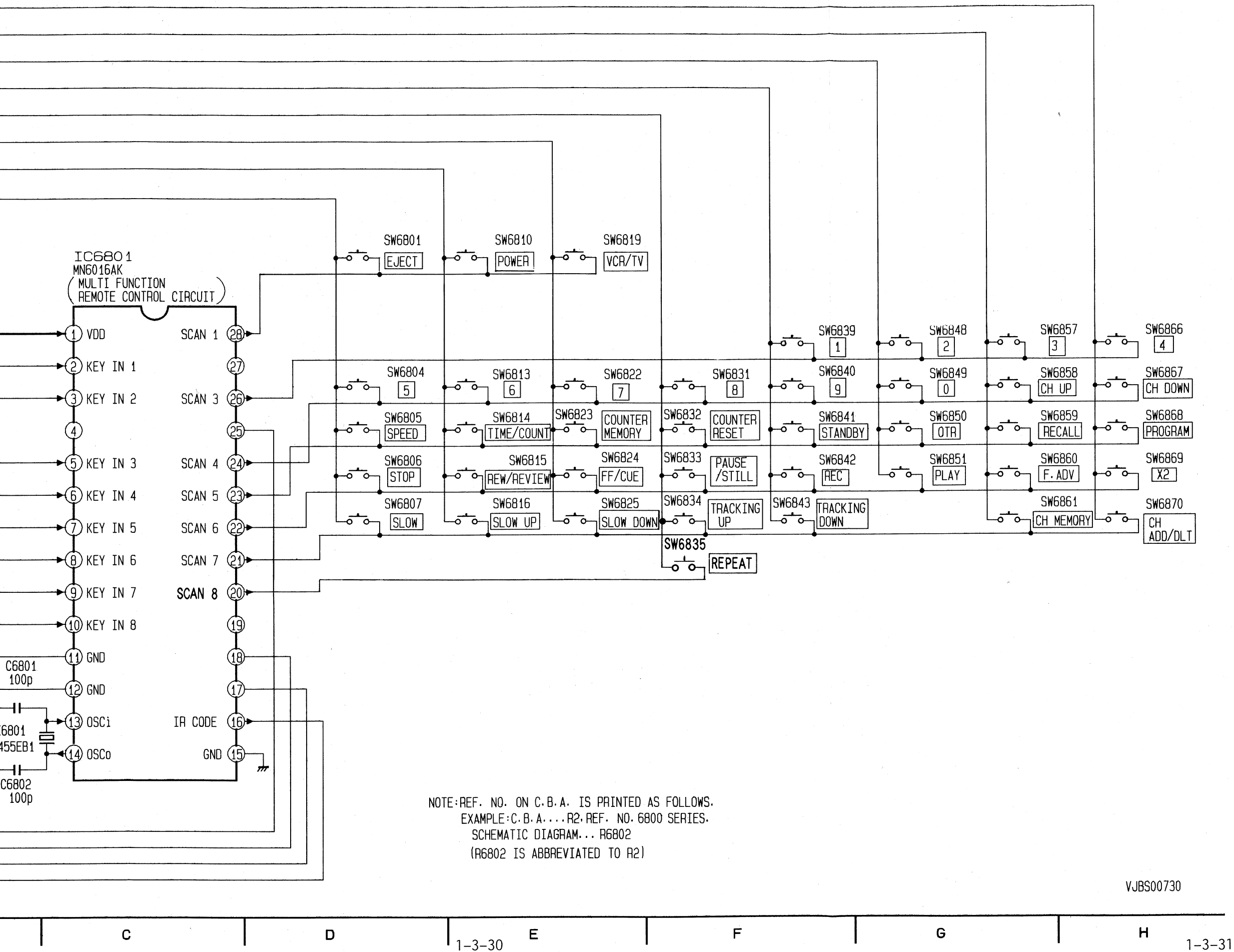


NOTE: REF. NO. ON C.B.A. IS PRINTED AS FOLLOWS.  
 EXAMPLE: C.B.A. ... R2. REF. NO. 6800 SERIES.  
 SCHEMATIC DIAGRAM... R6802  
 (R6802 IS ABBREVIATED TO R2)



EMATIC DIAGRAM

- NOTE:
1. DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS SHOWN IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
  2. MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS. ONLY USE ORIGINAL REPLACEMENT PARTS WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

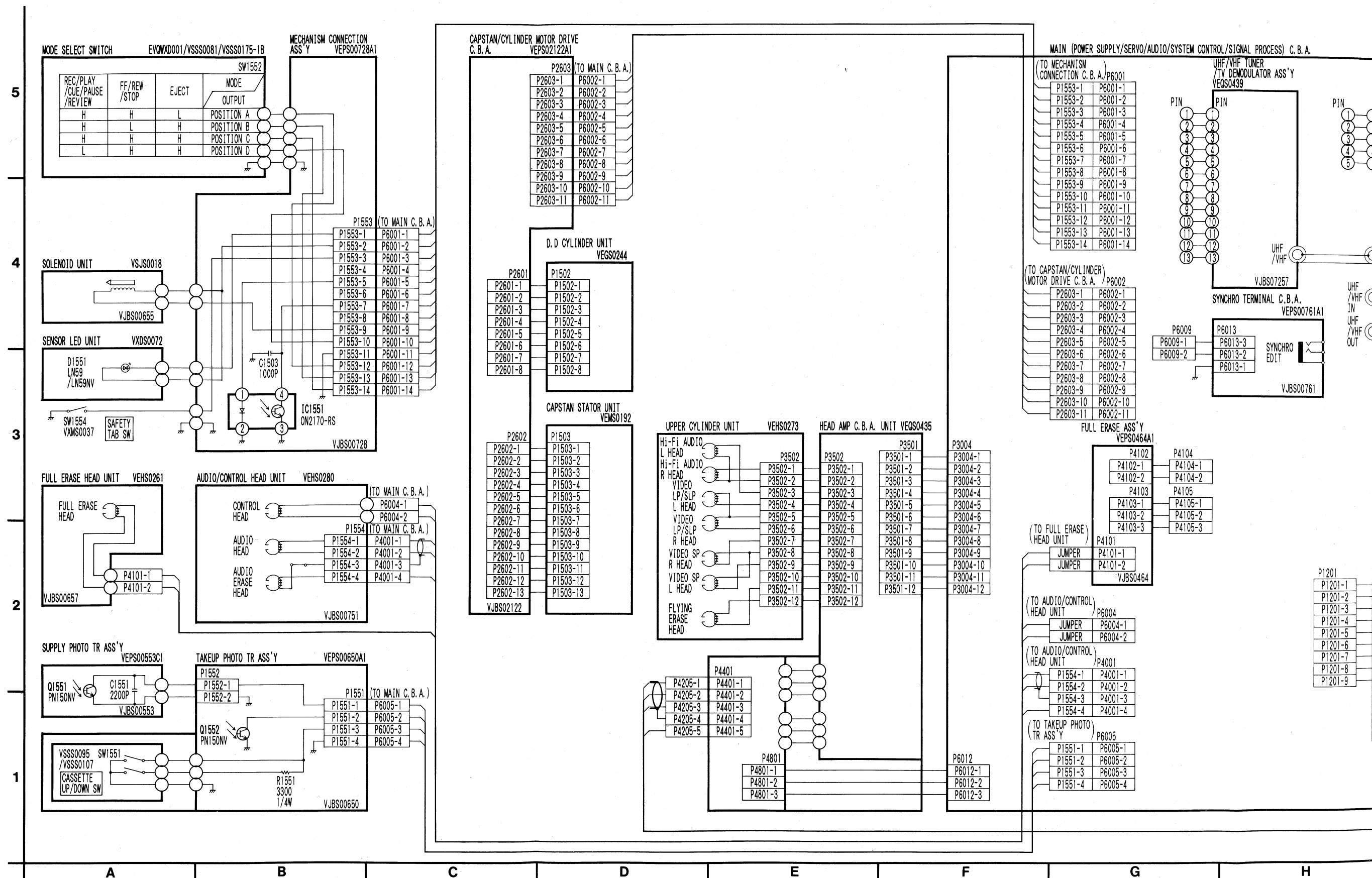




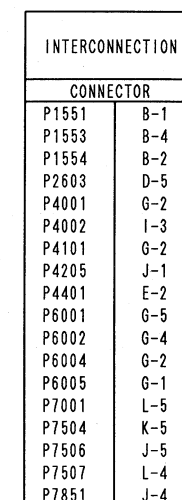
# INTERCONNECTION SCHEMATIC DIAGRAM

NOTE:

- DO NOT USE THE PART NUMBER SHOWN ON THIS DRAWING FOR ORDERING. THE CORRECT PART NUMBER IS IN THE PARTS LIST, AND MAY BE SLIGHTLY DIFFERENT OR AMENDED SINCE THIS DRAWING WAS PREPARED.
- MAINTAIN ORIGINAL FUNCTION AND RELIABILITY OF REPAIRED UNITS, ONLY USE ORIGINAL REPLACEMENT WHICH ARE LISTED WITH THEIR PART NUMBERS IN THE PARTS LIST SECTION OF THE SERVICE MANUAL.

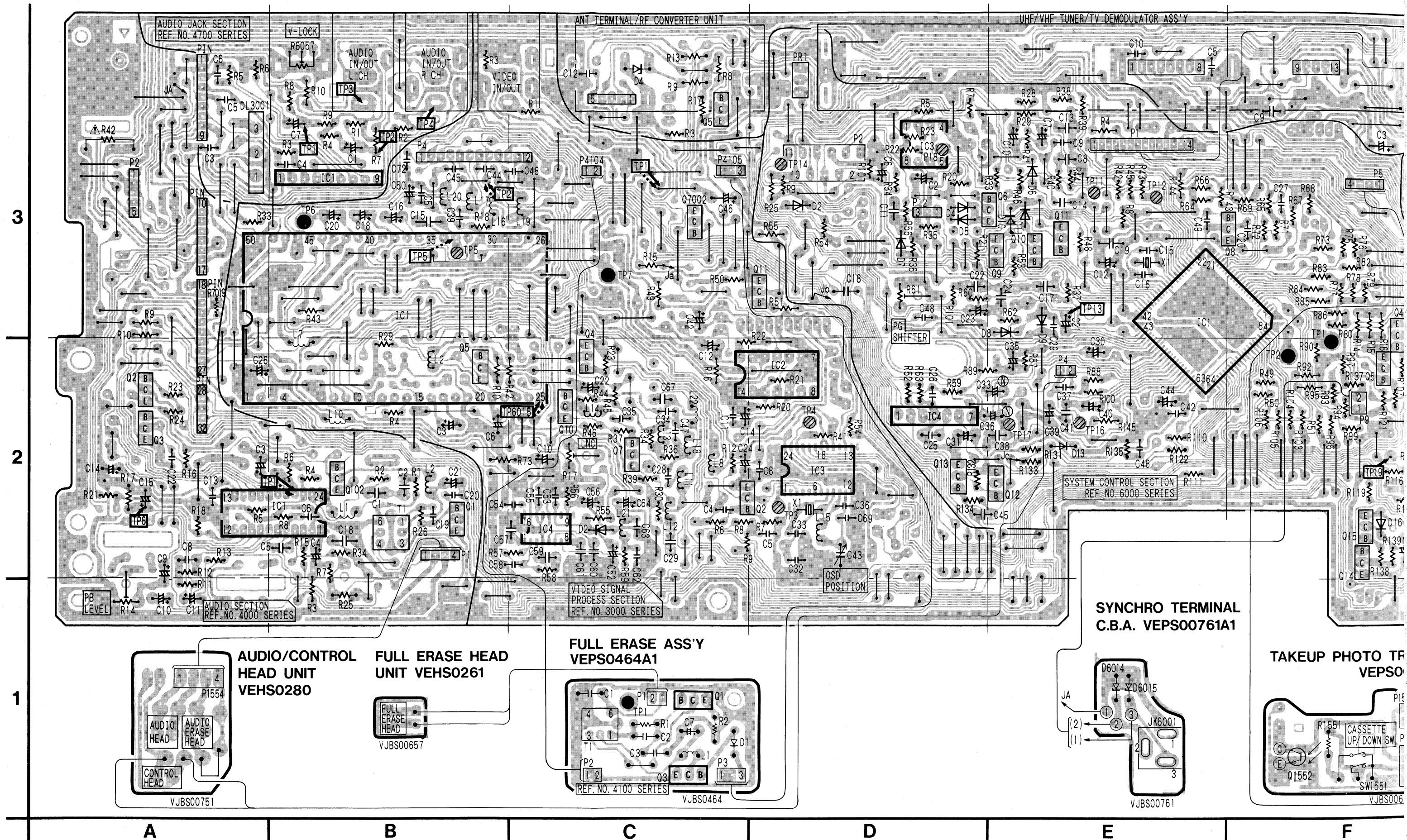


**IMPORTANT SAFETY NOTICE:**  
COMPONENTS IDENTIFIED BY THE SIGN  HAVE  
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.  
WHEN REPLACING ANY OF THESE COMPONENTS, USE  
ONLY THE SPECIFIED PARTS.

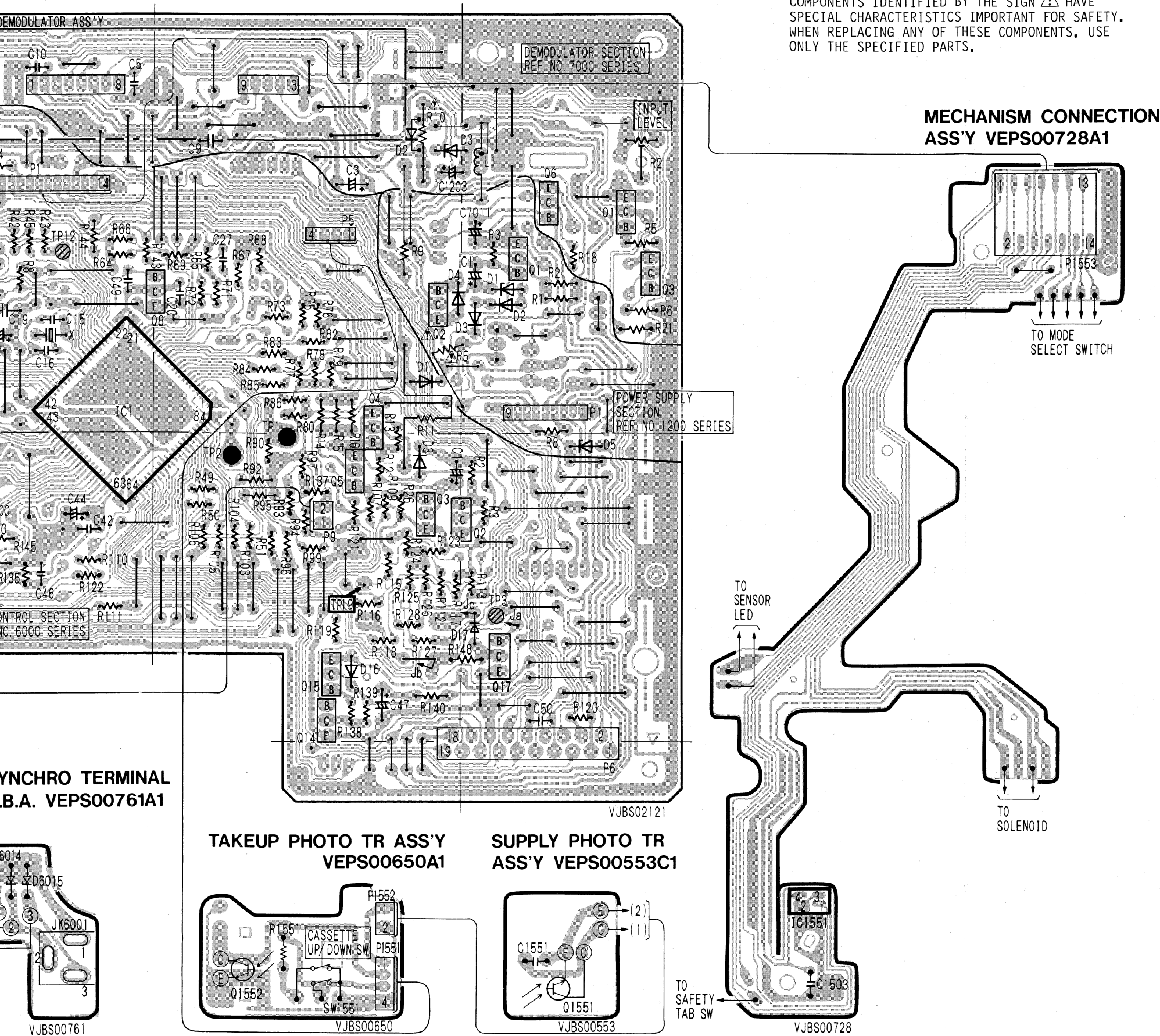




# MAIN (POWER SUPPLY/SERVO/AUDIO/SYSTEM CONTROL/SIGNAL PROCESS) C.B.A. VEPS02121AV1







IMPORTANT SAFETY NOTICE:  
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ONLY THE SPECIFIED PARTS.

# LEADLESS COMPONENT PARTS LOCATION GUIDE- MAIN C.B.A.

|       |     |       |     |       |     |
|-------|-----|-------|-----|-------|-----|
| R1203 | G-3 | R6029 | E-3 | R6120 | G-2 |
| R3001 | C-3 | R6033 | E-3 | R6121 | F-2 |
| R3003 | B-3 | R6034 | D-3 | R6122 | E-2 |
| R3004 | B-2 | R6035 | D-3 | R6123 | F-2 |
| R3006 | C-2 | R6036 | D-3 | R6124 | F-2 |
| R3007 | D-2 | R6037 | E-3 | R6125 | F-2 |
| R3008 | C-2 | R6038 | E-3 | R6126 | F-2 |
| R3009 | C-2 | R6039 | E-3 | R6127 | F-2 |
| R3012 | C-3 | R6040 | E-3 | R6128 | F-2 |
| R3018 | B-3 | R6041 | E-3 | R6131 | E-2 |
| R3020 | D-2 | R6042 | E-3 | R6132 | D-2 |
| R3021 | D-2 | R6043 | E-3 | R6133 | E-2 |
| R3022 | C-2 | R6044 | E-3 | R6134 | D-2 |
| R3023 | C-2 | R6045 | E-3 | R6135 | E-2 |
| R3029 | B-2 | R6046 | E-3 | R6137 | F-2 |
| R3030 | C-2 | R6048 | E-3 | R6138 | F-2 |
| R3033 | A-3 | R6049 | F-2 | R6139 | F-2 |
| R3034 | C-2 | R6050 | F-2 | R6143 | E-3 |
| R3036 | C-2 | R6051 | F-2 | R7003 | C-3 |
| R3037 | C-2 | R6052 | D-2 | R7005 | G-3 |
| R3039 | C-2 | R6053 | E-3 | R7018 | G-3 |
| R3041 | D-2 | R6054 | D-3 | R7019 | A-3 |
| R3044 | C-2 | R6056 | D-3 | R3004 | C-2 |
| R3045 | C-2 | R6059 | D-2 | R3005 | D-2 |
| R3046 | C-2 | R6060 | D-3 | R3008 | D-2 |
| R3047 | C-2 | R6062 | E-3 | R3028 | C-2 |
| R3050 | C-3 | R6063 | D-2 | R3032 | D-2 |
| R3054 | D-2 | R6064 | E-3 | R3033 | D-2 |
| R3056 | C-2 | R6065 | E-3 | R3034 | C-2 |
| R3057 | C-2 | R6066 | E-3 | R3035 | C-2 |
| R3058 | C-2 | R6067 | F-3 | R3036 | D-2 |
| R3059 | C-2 | R6068 | F-3 | R3037 | C-2 |
| R4001 | B-2 | R6069 | F-3 | R3039 | B-3 |
| R4002 | B-2 | R6071 | F-3 | R3044 | B-3 |
| R4004 | B-2 | R6072 | F-3 | R3045 | B-3 |
| R4005 | A-2 | R6073 | F-3 | R3047 | C-2 |
| R4006 | B-2 | R6075 | F-3 | R3048 | C-3 |
| R4007 | B-2 | R6076 | F-3 | R3051 | B-3 |
| R4008 | B-2 | R6077 | F-3 | R3053 | C-2 |
| R4011 | A-1 | R6078 | F-3 | R3054 | C-2 |
| R4012 | A-2 | R6079 | F-3 | R3055 | C-2 |
| R4013 | A-2 | R6080 | F-3 | R3058 | C-2 |
| R4015 | B-2 | R6082 | F-3 | R3062 | C-2 |
| R4016 | A-2 | R6083 | F-3 | R3063 | C-2 |
| R4017 | A-2 | R6084 | F-3 | R3069 | D-2 |
| R4018 | A-2 | R6085 | F-3 | R3072 | B-3 |
| R4021 | A-2 | R6086 | F-3 | R4006 | B-2 |
| R4023 | A-2 | R6087 | E-2 | R4013 | A-2 |
| R4024 | A-2 | R6088 | E-2 | R4019 | B-2 |
| R4026 | B-2 | R6089 | F-2 | R4020 | B-2 |
| R4034 | B-2 | R6090 | F-2 | R4022 | A-2 |
| R4701 | B-3 | R6093 | F-2 | R4702 | B-3 |
| R4702 | B-3 | R6094 | F-2 | R4703 | A-3 |
| R4703 | B-3 | R6096 | F-2 | R4704 | B-3 |
| R4704 | B-3 | R6097 | F-2 | R4705 | A-3 |
| R4705 | A-3 | R6099 | F-2 | R4706 | A-3 |
| R4706 | A-3 | R6100 | E-2 | R6009 | E-3 |
| R4708 | B-3 | R6101 | D-3 | R6014 | E-3 |
| R4709 | B-3 | R6103 | F-2 | R6015 | E-3 |
| R6002 | G-2 | R6104 | F-2 | R6016 | E-3 |
| R6003 | G-2 | R6105 | F-2 | R6020 | F-3 |
| R6005 | D-3 | R6106 | F-2 | R6026 | D-2 |
| R6007 | D-3 | R6107 | F-2 | R6027 | F-3 |
| R6008 | E-3 | R6109 | F-2 | R6029 | E-3 |
| R6009 | D-3 | R6110 | E-2 | R6037 | E-2 |
| R6010 | D-3 | R6111 | E-2 | R6042 | E-2 |
| R6012 | F-2 | R6112 | F-2 | R6046 | E-2 |
| R6013 | F-3 | R6113 | G-2 | R6048 | D-3 |
| R6020 | D-3 | R6115 | F-2 | R6049 | E-3 |
| R6022 | D-3 | R6116 | F-2 | R6050 | G-2 |
| R6023 | D-3 | R6117 | F-2 | R7005 | E-3 |
| R6026 | F-2 | R6118 | F-2 | R7010 | E-3 |
| R6028 | E-3 | R6119 | F-2 | R7012 | C-3 |

| POWER SUPPLY SECTION |     |
|----------------------|-----|
| TRANSISTOR           |     |
| Q1                   | G-3 |
| Q2                   | F-3 |
| CONNECTOR            |     |
| P1                   | G-3 |

| VIDEO SIGNAL SECTION |     |
|----------------------|-----|
| TRANSISTOR           |     |
| Q2                   | D-2 |
| Q4                   | C-3 |
| Q5                   | B-2 |
| Q7                   | C-2 |
| Q10                  | C-2 |
| Q11                  | D-3 |
| IC                   |     |
| IC1                  | B-3 |
| IC2                  | D-2 |
| IC3                  | D-2 |
| IC4                  | C-2 |
| CONNECTOR            |     |
| P4                   | B-3 |
| TEST POINT           |     |
| TP1                  | C-3 |
| TP2                  | B-3 |
| TP3                  | D-2 |
| TP4                  | D-2 |
| TP5                  | B-3 |
| ※TP5                 | B-3 |
| TP6                  | B-3 |
| TP7                  | C-3 |
| ADJUSTMENT           |     |
| R17                  | C-2 |
| C43                  | D-2 |

| AUDIO SECTION |     |
|---------------|-----|
| TRANSISTOR    |     |
| Q1            | B-2 |
| Q2            | A-2 |
| Q3            | A-2 |
| Q102          | B-2 |
| IC            |     |
| IC1           | B-2 |
| CONNECTOR     |     |
| P1            | B-2 |
| P2            | A-3 |
| P104          | C-3 |
| P105          | C-3 |
| TEST POINT    |     |
| TP1           | B-2 |
| TP6           | A-2 |
| ADJUSTMENT    |     |
| R14           | A-1 |

| AUDIO JACK SECTION |     |
|--------------------|-----|
| IC                 |     |
| IC1                | B-3 |
| TEST POINT         |     |
| TP1                | B-3 |
| TP2                | B-3 |
| TP3                | B-3 |
| TP4                | B-3 |

| SERVO/SYSTEM CONTROL SECTION |     |
|------------------------------|-----|
| TRANSISTOR                   |     |
| Q2                           | G-2 |
| Q3                           | F-2 |
| Q4                           | F-3 |
| Q5                           | F-2 |
| Q6                           | E-3 |
| Q8                           | F-3 |
| Q9                           | E-3 |
| Q10                          | E-3 |
| Q11                          | E-3 |
| Q12                          | E-2 |
| Q13                          | D-2 |
| Q14                          | F-2 |
| Q15                          | F-2 |
| Q17                          | G-2 |
| IC                           |     |
| IC1                          | E-3 |
| IC3                          | D-3 |
| IC4                          | D-2 |
| CONNECTOR                    |     |
| P1                           | E-3 |
| P2                           | D-3 |
| P4                           | E-2 |
| P5                           | F-3 |
| P6                           | G-1 |
| P9                           | F-2 |
| P12                          | D-3 |
| TEST POINT                   |     |
| TP1                          | F-3 |
| TP2                          | F-2 |
| TP3                          | G-2 |
| TP11                         | E-3 |
| TP12                         | E-3 |
| TP13                         | E-3 |
| TP14                         | D-3 |
| TP15                         | C-2 |
| TP16                         | E-2 |
| TP17                         | E-2 |
| TP18                         | D-3 |
| TP19                         | F-2 |
| ADJUSTMENT                   |     |
| R57                          | B-3 |
| R61                          | D-3 |

| DEMOMULATOR SECTION |     |
|---------------------|-----|
| TRANSISTOR          |     |
| Q1                  | G-3 |
| Q2                  | C-3 |
| Q3                  | G-3 |
| Q5                  | C-3 |
| Q6                  | G-3 |
| ADJUSTMENT          |     |
| R2                  | G-3 |

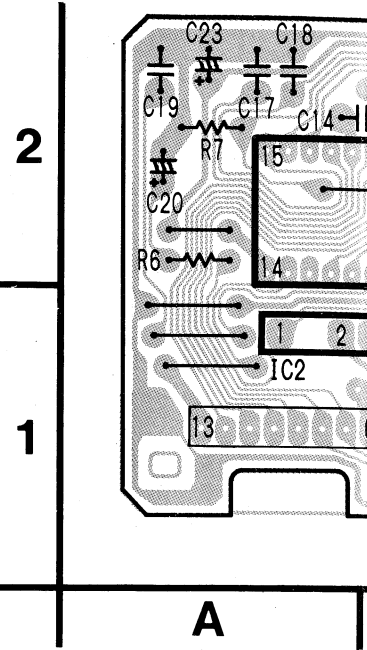
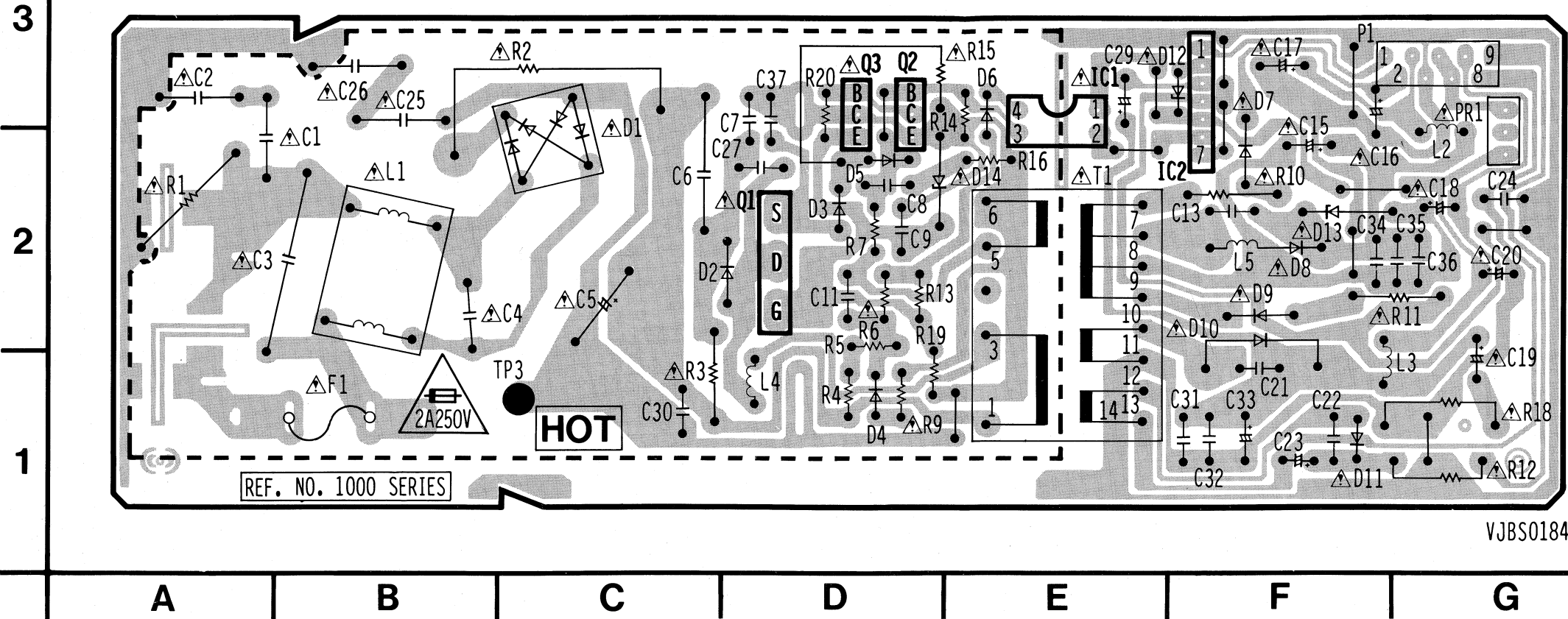
※ :COMPONENT SIDE

POWER SUPPLY ASS'Y VEPS0184B1

HOT CIRCUIT. BE CAREFUL AND  
USE A ISOLATION TRANSFORMER WHEN SERVICING.

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CAPSTAN/CYL

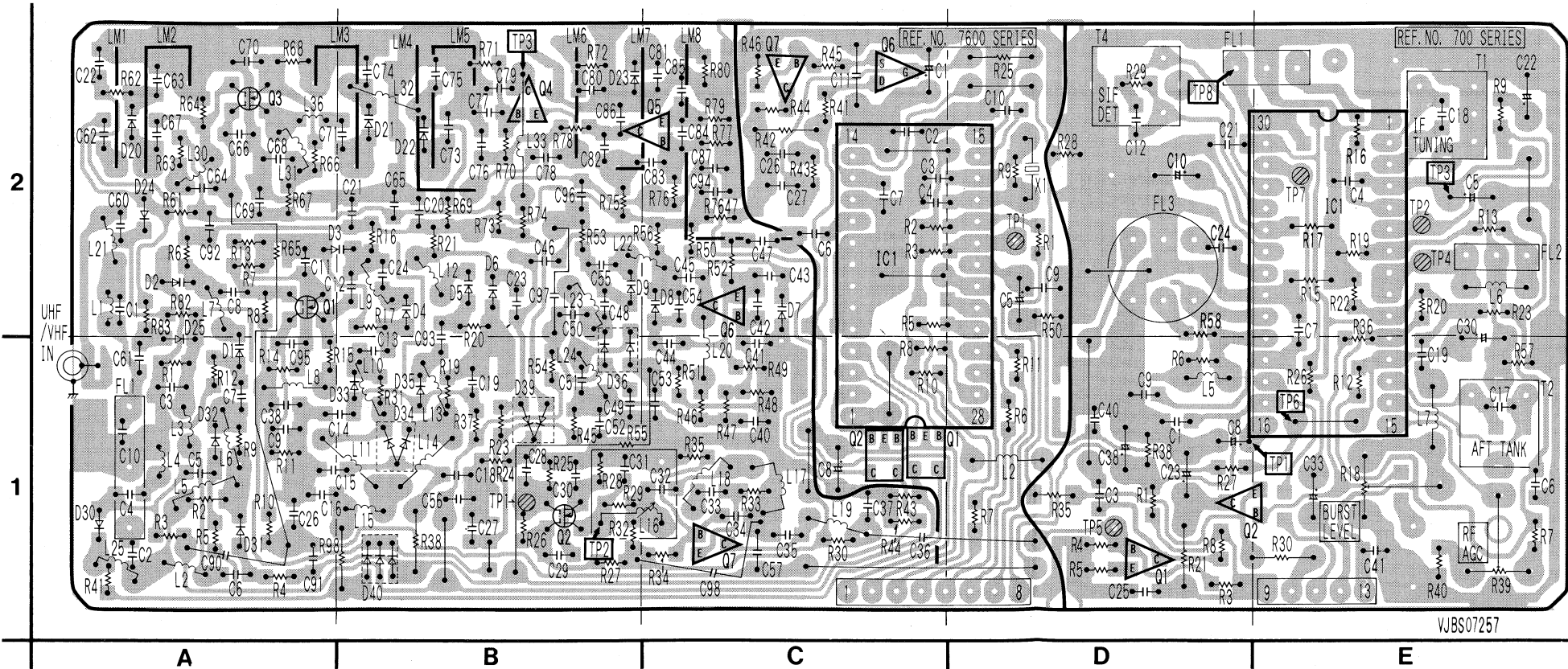


UHF/VHF TUNER/TV DEMODULATOR ASS'Y VEQS0439

IMPORTANT NOTICE:  
IF PARTS OF TUNER AND FS SECTION ARE  
REPLACED INDIVIDUALLY, THE FCC SPECIFICATIONS  
WILL NOT BE SATISFIED.  
DURING SERVICING, PLEASE REPLACE AS A UNIT.

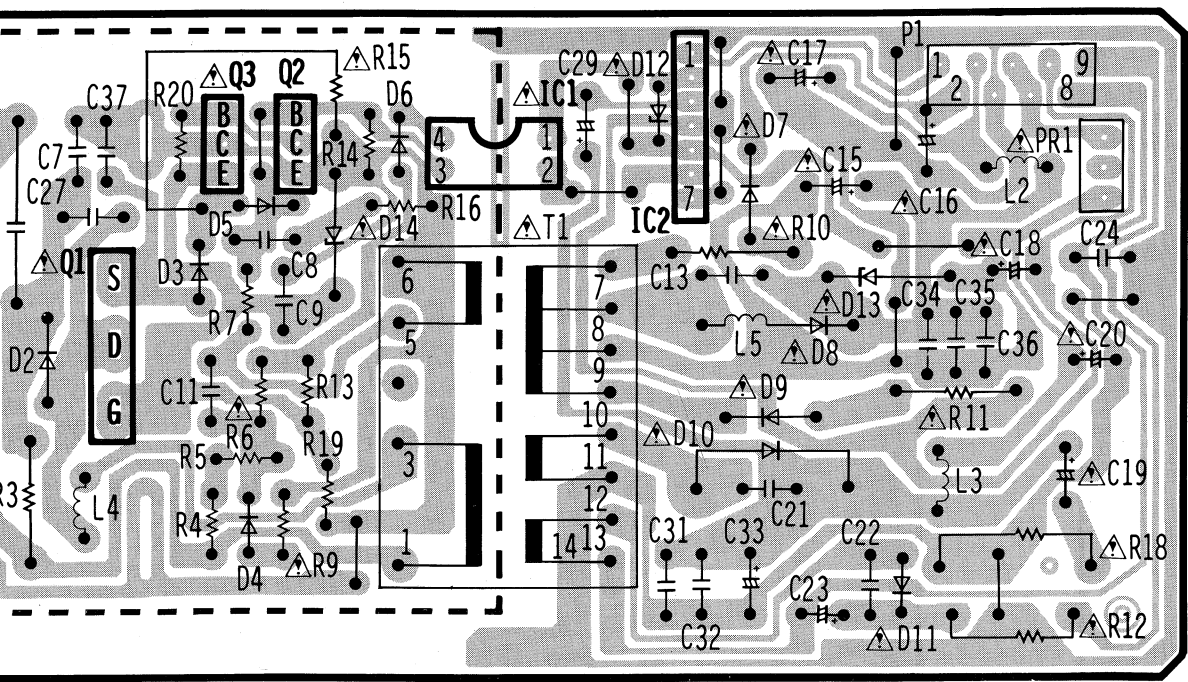
LEADLESS COMPONENT PARTS LOCATION GUIDE-  
UHF/VHF TUNER/TV DEMODULATOR ASS'Y

|      |     |      |     |      |     |
|------|-----|------|-----|------|-----|
| Q701 | D-1 | R719 | E-2 | C703 | D-1 |
| Q702 | D-1 | R720 | E-2 | C704 | E-2 |
| R701 | D-1 | R722 | E-1 | C706 | E-1 |
| R703 | D-1 | R723 | E-2 | C707 | E-2 |
| R704 | D-1 | R726 | E-1 | C709 | D-1 |
| R705 | D-1 | R727 | D-1 | C712 | D-2 |
| R706 | D-1 | R728 | D-2 | C717 | E-1 |
| R707 | E-1 | R729 | D-2 | C718 | E-2 |
| R708 | D-1 | R735 | D-1 | C719 | E-1 |
| R709 | E-2 | R736 | E-1 | C721 | D-1 |
| R712 | E-1 | R738 | D-1 | C724 | D-2 |
| R713 | E-2 | R740 | E-1 | C725 | D-1 |
| R715 | E-2 | R757 | E-1 | C740 | D-1 |
| R716 | E-2 | R758 | D-2 | C741 | E-1 |
| R717 | E-2 | C701 | D-1 |      |     |



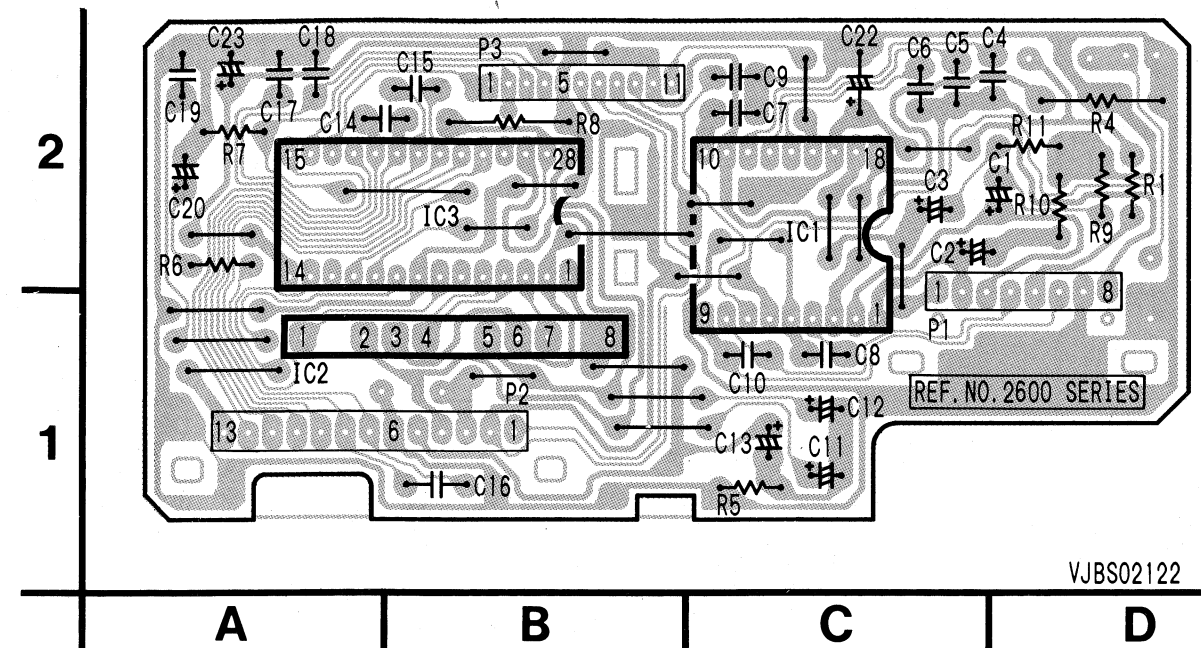


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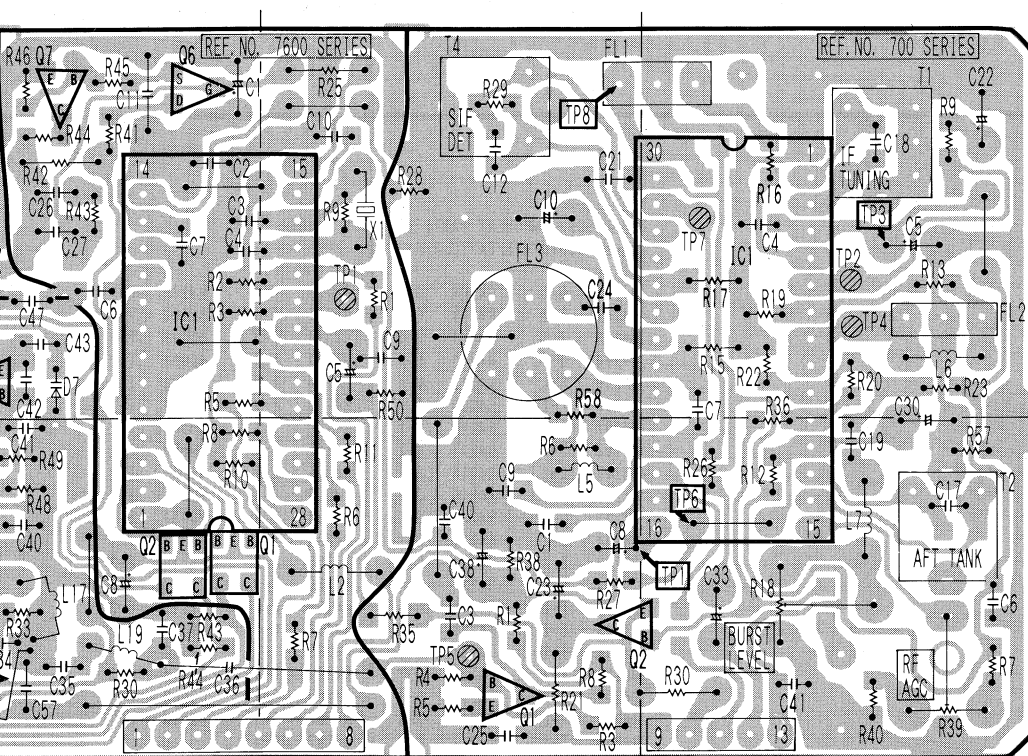
VJBS0184

## CAPSTAN/CYLINDER MOTOR DRIVE C.B.A. VEPS02122A1



VJBS02122

S'Y VEQS0439



VJBS07257

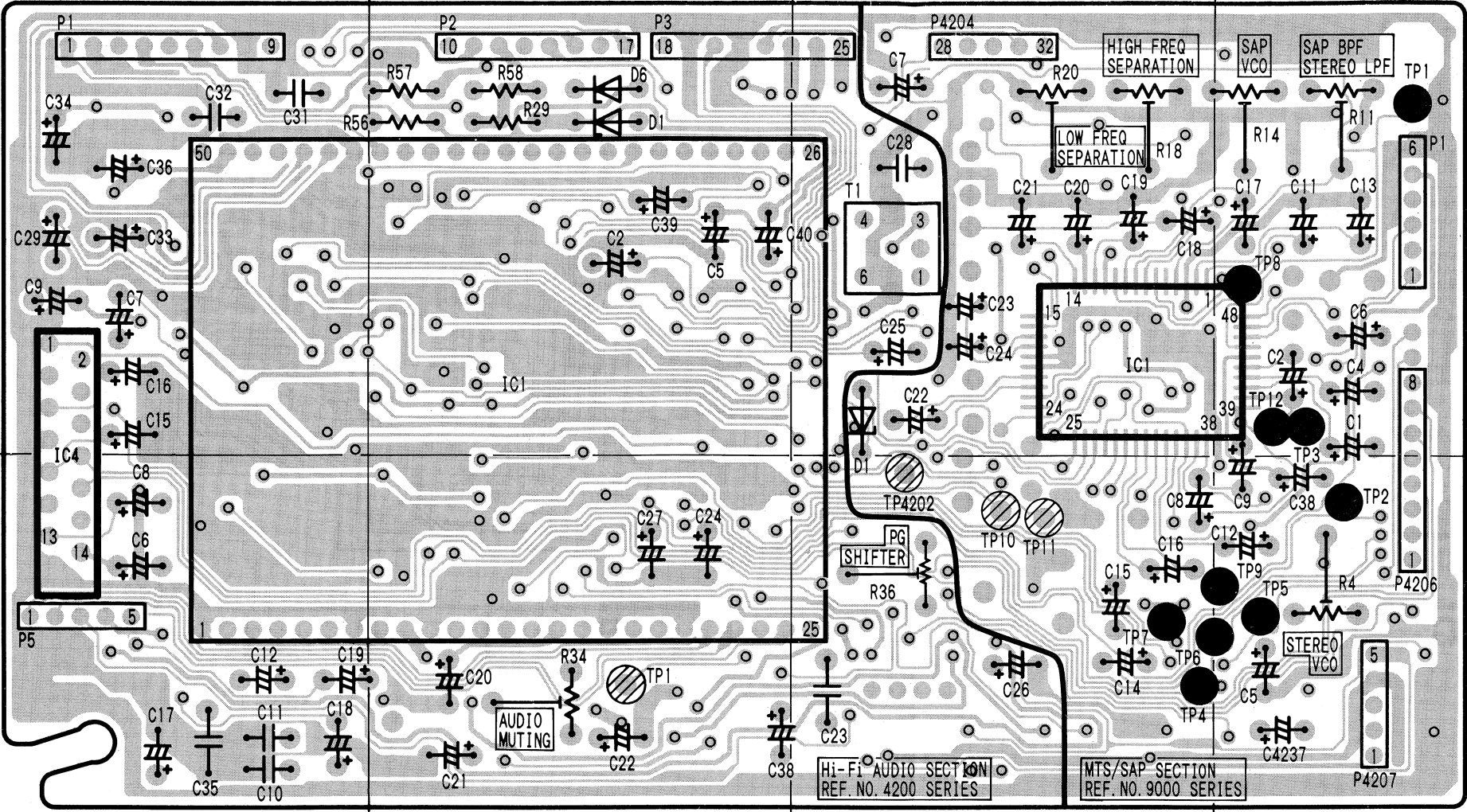
IMPORTANT NOTICE:  
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WILL NOT BE SATISFIED.  
DURING SERVICING, PLEASE REPLACE AS A UNIT.

LEADLESS COMPONENT PARTS LOCATION GUIDE-  
UHF/VHF TUNER/TV DEMODULATOR ASS'Y

|      |     |      |     |      |     |
|------|-----|------|-----|------|-----|
| Q701 | D-1 | R719 | E-2 | C703 | D-1 |
| Q702 | D-1 | R720 | E-2 | C704 | E-2 |
| R701 | D-1 | R722 | E-1 | C706 | E-1 |
| R703 | D-1 | R723 | E-2 | C707 | E-2 |
| R704 | D-1 | R726 | E-1 | C709 | D-1 |
| R705 | D-1 | R727 | D-1 | C712 | D-2 |
| R706 | D-1 | R728 | D-2 | C717 | E-1 |
| R707 | E-1 | R729 | D-2 | C718 | E-2 |
| R708 | D-1 | R735 | D-1 | C719 | E-1 |
| R709 | E-2 | R736 | E-1 | C721 | D-1 |
| R712 | E-1 | R738 | D-1 | C724 | D-2 |
| R713 | E-2 | R740 | E-1 | C725 | D-1 |
| R715 | E-2 | R757 | E-1 | C740 | D-1 |
| R716 | E-2 | R758 | D-2 | C741 | E-1 |
| R717 | E-2 | C701 | D-1 |      |     |

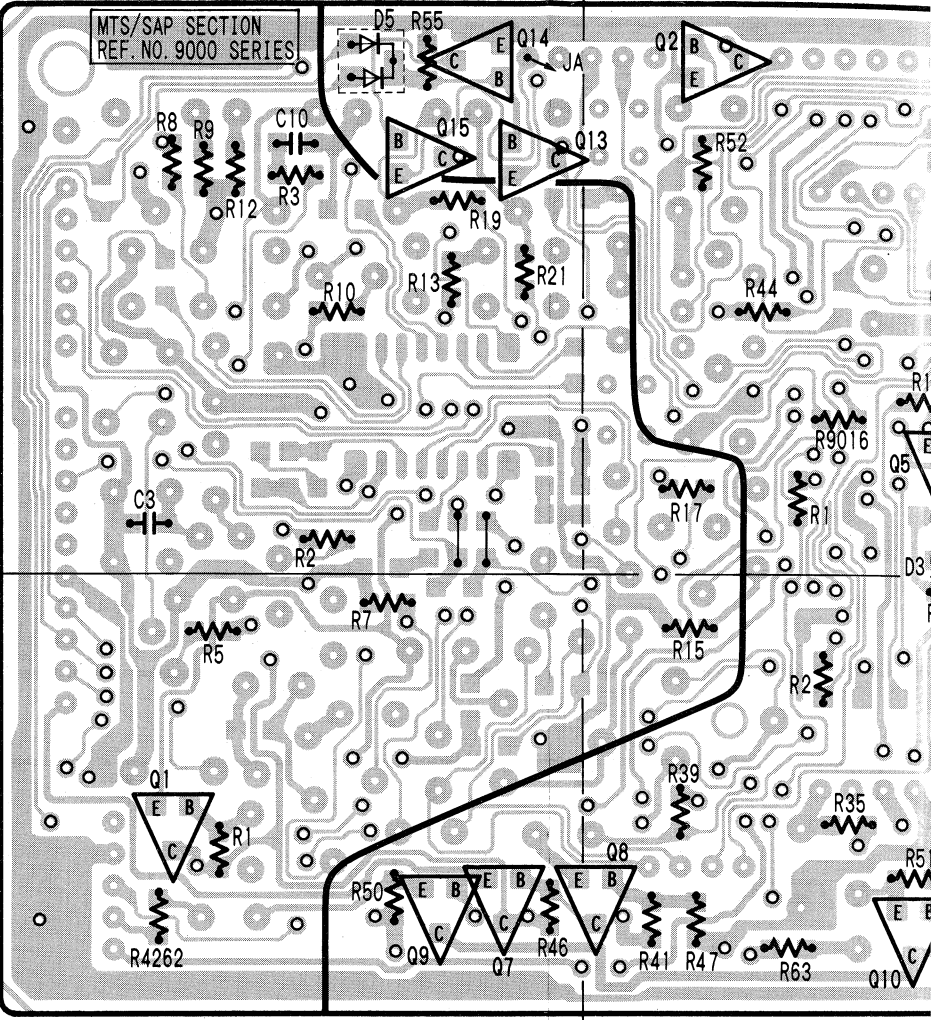
Hi-Fi AUDIO/MTS/SAP C.B.A. VEPS0463A1

(COMPONENT SIDE)



(DUAL PATTERNS)

(FOIL SIDE)



(DUAL PATTERNS)

| Hi-Fi AUDIO SECTION |     |
|---------------------|-----|
| TRANSISTOR          |     |
| Q1                  | G-1 |
| Q2                  | F-2 |
| Q3                  | G-2 |
| Q4                  | G-2 |
| Q5                  | F-2 |
| Q6                  | F-2 |
| Q7                  | E-1 |
| Q8                  | F-1 |
| Q9                  | E-1 |
| Q10                 | F-1 |
| Q13                 | E-2 |
| Q14                 | E-2 |
| Q15                 | E-2 |

| Hi-Fi AUDIO SECTION |     |
|---------------------|-----|
| IC                  |     |
| IC1                 | B-2 |
| IC2                 | G-2 |
| IC3                 | G-1 |
| IC4                 | A-1 |
| CONNECTOR           |     |
| P1                  | A-2 |
| P2                  | B-2 |
| P3                  | B-2 |
| P4                  | C-2 |
| P5                  | A-1 |
| P6                  | D-1 |
| P7                  | D-1 |
| TEST POINT          |     |
| TP1                 | B-1 |
| TP2                 | C-1 |
| ADJUSTMENT          |     |
| R34                 | B-1 |
| R36                 | C-1 |

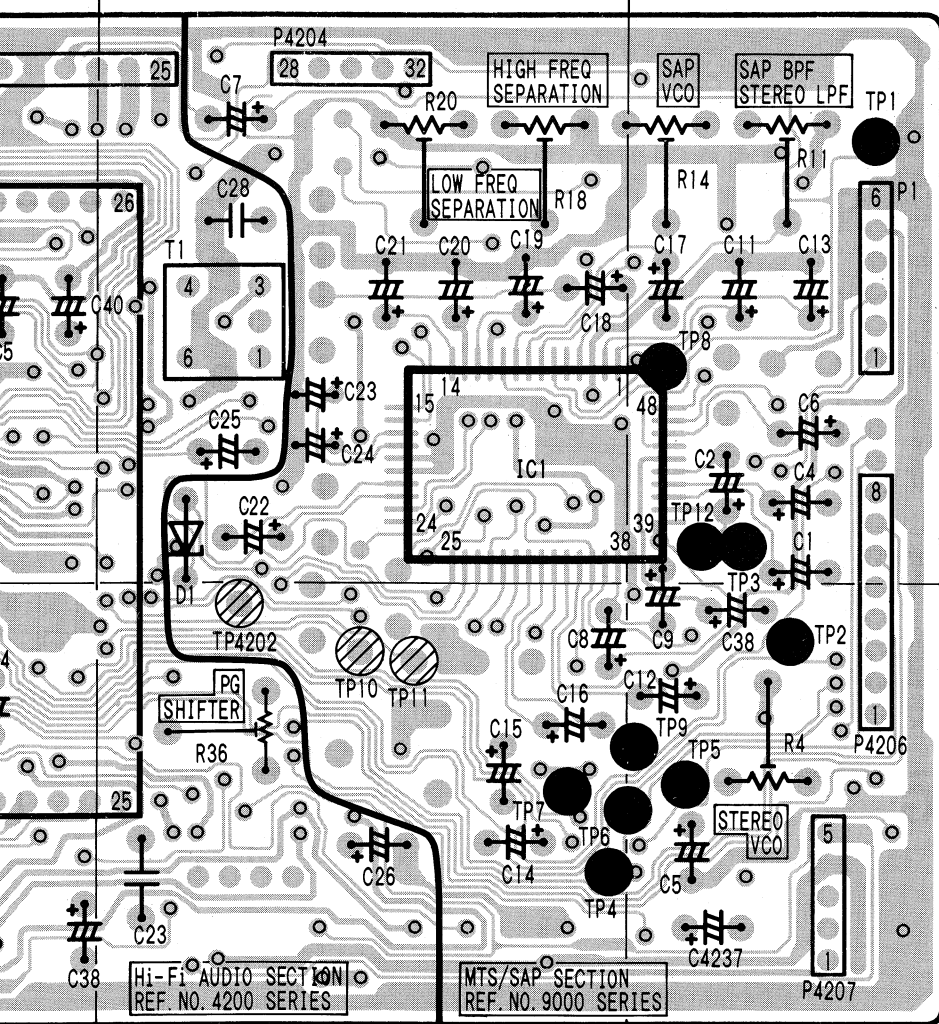
| MTS/SAP SECTION |     |
|-----------------|-----|
| TRANSISTOR      |     |
| Q1              | E-1 |
| IC              |     |
| IC1             | D-2 |
| CONNECTOR       |     |
| P1              | D-2 |
| TEST POINT      |     |
| TP1             | D-2 |
| TP2             | D-1 |
| TP3             | D-2 |
| TP4             | D-1 |
| TP5             | D-1 |
| TP6             | C-1 |
| TP7             | C-1 |
| TP8             | D-2 |
| TP9             | D-1 |
| TP10            | C-1 |
| TP11            | C-1 |
| TP12            | D-2 |
| ADJUSTMENT      |     |
| R4              | D-1 |
| R11             | D-2 |
| R14             | D-2 |
| R18             | C-2 |
| R20             | C-2 |

LEADLESS COMPONENT PARTS LOCATION GUIDE-  
Hi-Fi AUDIO/MTS/SAP C. B. A.

|       |     |       |     |       |     |       |     |
|-------|-----|-------|-----|-------|-----|-------|-----|
| Q4201 | G-1 | R4209 | G-2 | R4238 | F-1 | R4271 | G-2 |
| Q4202 | F-2 | R4210 | G-2 | R4239 | F-1 | R9001 | E-1 |
| Q4203 | G-2 | R4211 | G-2 | R4240 | F-2 | R9002 | E-2 |
| Q4204 | G-2 | R4212 | G-1 | R4241 | F-1 | R9003 | E-2 |
| Q4205 | F-2 | R4213 | G-1 | R4244 | F-2 | R9005 | E-1 |
| Q4206 | F-2 | R4215 | G-2 | R4245 | F-2 | R9007 | E-1 |
| Q4207 | E-1 | R4216 | G-2 | R4246 | E-1 | R9008 | F-2 |
| Q4208 | F-1 | R4217 | G-2 | R4247 | F-1 | R9009 | E-2 |
| Q4209 | E-1 | R4218 | F-2 | R4249 | G-2 | R9010 | E-2 |
| Q4210 | F-1 | R4219 | G-2 | R4250 | E-1 | R9012 | E-2 |
| Q4213 | E-2 | R4221 | G-1 | R4251 | F-1 | R9013 | E-2 |
| Q4214 | E-2 | R4222 | G-1 | R4252 | F-2 | R9015 | F-1 |
| Q4215 | E-2 | R4223 | G-1 | R4255 | E-2 | R9016 | F-2 |
| Q9001 | E-1 | R4224 | G-1 | R4259 | G-2 | R9017 | F-2 |
| D4202 | F-2 | R4225 | G-1 | R4260 | G-2 | R9019 | E-2 |
| D4203 | F-2 | R4226 | G-1 | R4262 | E-1 | R9021 | E-2 |
| D4204 | F-2 | R4227 | G-2 | R4263 | I-1 | C4213 | G-1 |
| D4205 | E-2 | R4228 | G-1 | R4264 | G-1 | C4214 | G-1 |
| D4207 | G-2 | R4230 | G-1 | R4265 | G-1 | C9003 | E-2 |
| R4201 | F-2 | R4231 | G-1 | R4266 | G-1 | C9010 | E-2 |
| R4202 | F-1 | R4232 | G-2 | R4267 | G-1 |       |     |
| R4203 | G-2 | R4233 | G-1 | R4268 | G-2 |       |     |
| R4205 | G-2 | R4235 | F-1 | R4269 | G-2 |       |     |
| R4207 | G-2 | R4237 | F-2 | R4270 | G-2 |       |     |



ONENT SIDE)



DUAL PATTERNS)

C

D

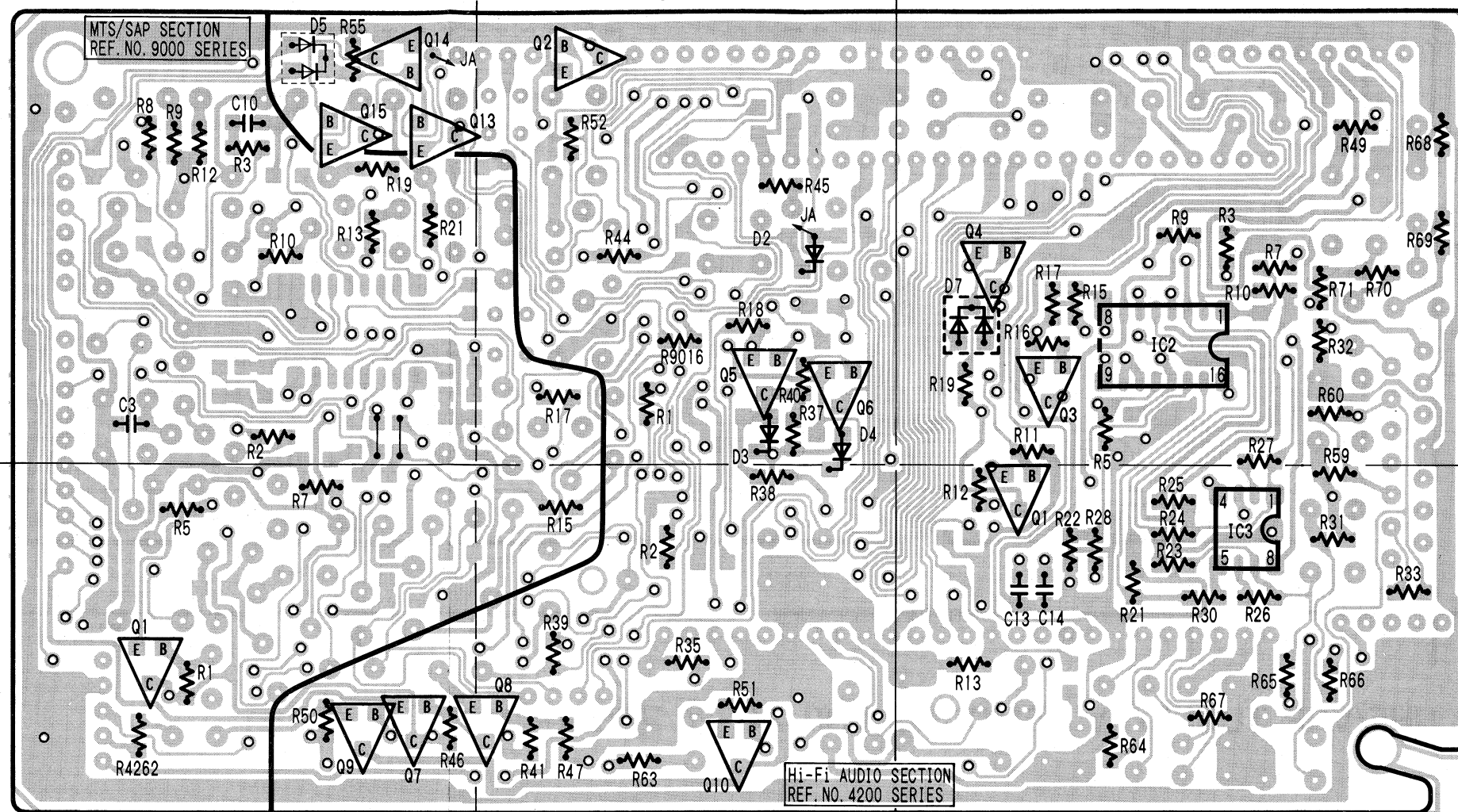
E

F

G

| MTS/SAP SECTION |     |
|-----------------|-----|
| TRANSISTOR      |     |
| Q1              | E-1 |
| IC              |     |
| IC1             | D-2 |
| CONNECTOR       |     |
| P1              | D-2 |
| TEST POINT      |     |
| TP1             | D-2 |
| TP2             | D-1 |
| TP3             | D-2 |
| TP4             | D-1 |
| TP5             | D-1 |
| TP6             | C-1 |
| TP7             | C-1 |
| TP8             | D-2 |
| TP9             | D-1 |
| TP10            | C-1 |
| TP11            | C-1 |
| TP12            | D-2 |
| ADJUSTMENT      |     |
| R4              | D-1 |
| R11             | D-2 |
| R14             | D-2 |
| R18             | C-2 |
| R20             | C-2 |

(FOIL SIDE)



(DUAL PATTERNS)

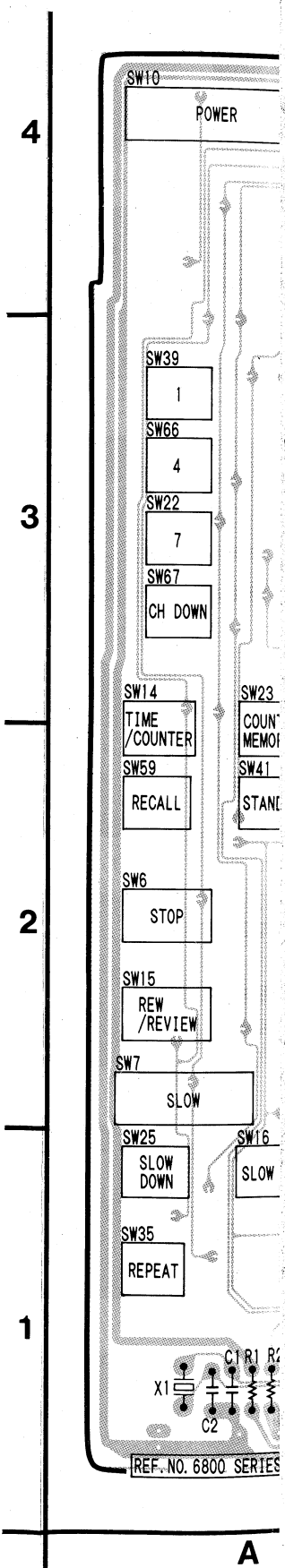
VJBS0463

LEADLESS COMPONENT PARTS LOCATION GUIDE-  
Hi-Fi AUDIO/MTS/SAP C. B. A.

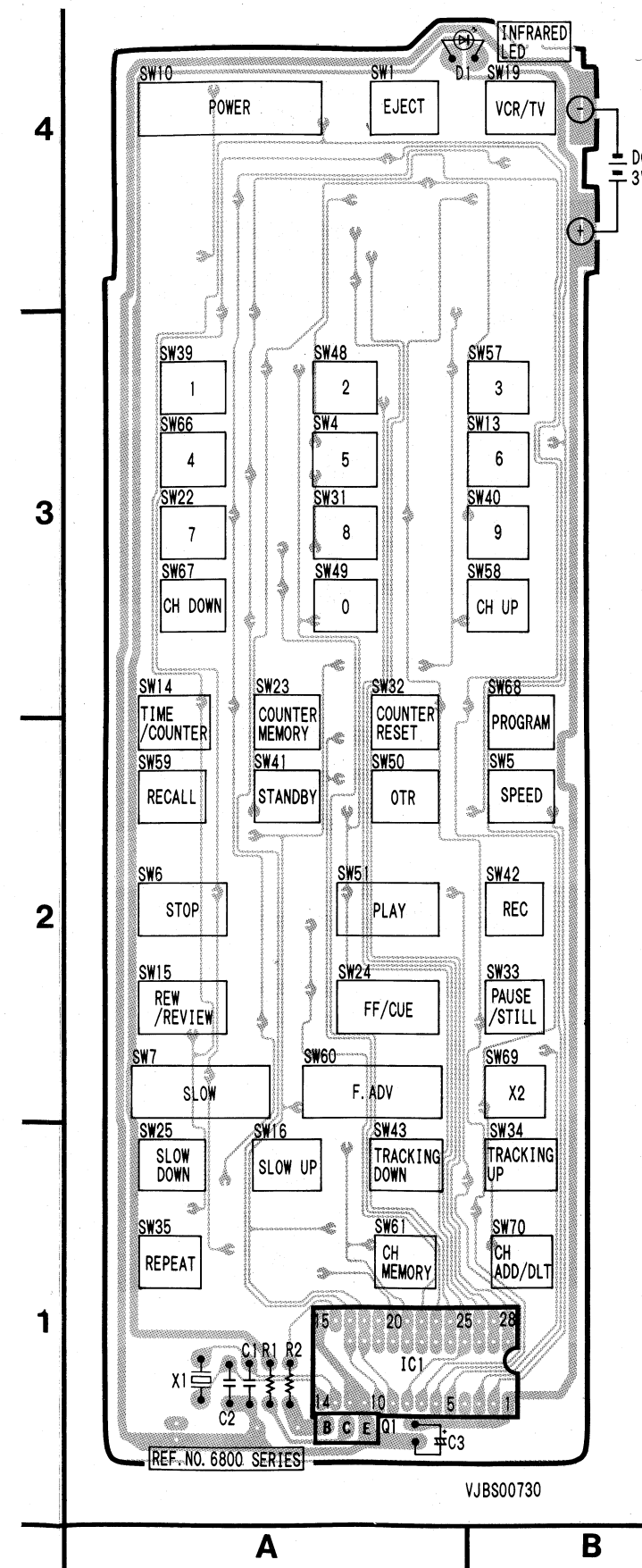
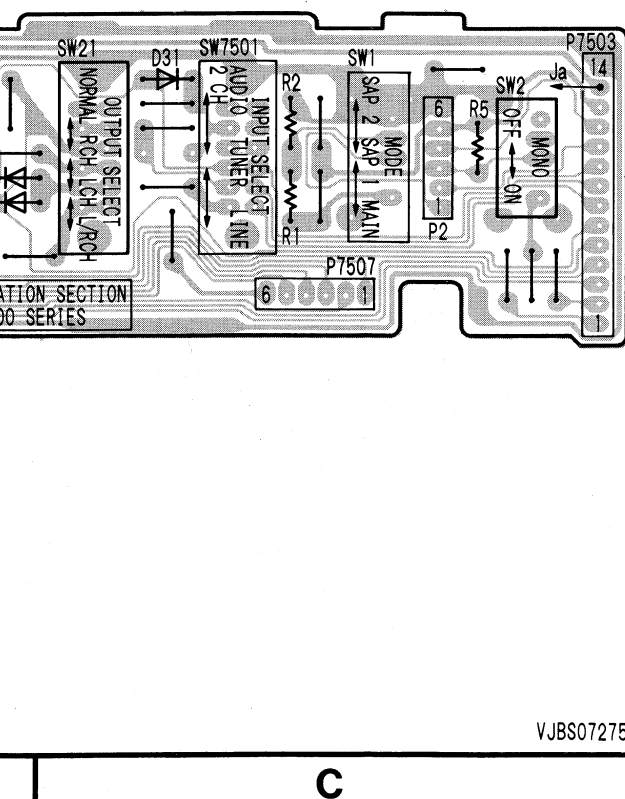
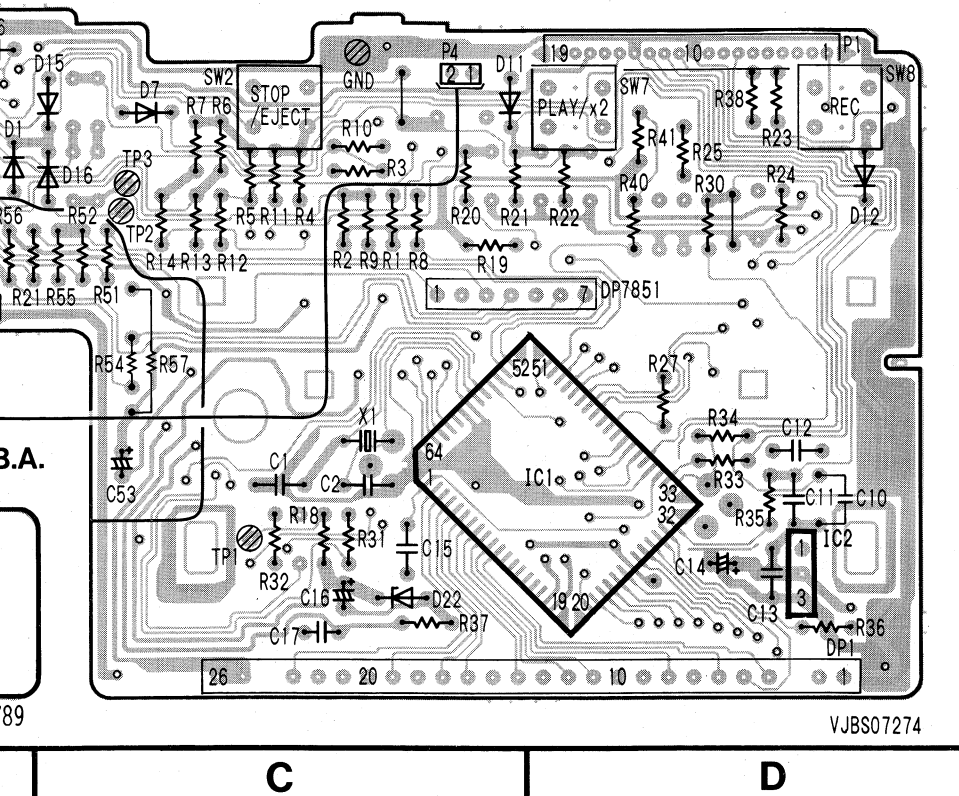
|       |     |       |     |       |     |       |     |
|-------|-----|-------|-----|-------|-----|-------|-----|
| Q4201 | G-1 | R4209 | G-2 | R4238 | F-1 | R4271 | G-2 |
| Q4202 | F-2 | R4210 | G-2 | R4239 | F-1 | R9001 | E-1 |
| Q4203 | G-2 | R4211 | G-2 | R4240 | F-2 | R9002 | E-2 |
| Q4204 | G-2 | R4212 | G-1 | R4241 | F-1 | R9003 | E-2 |
| Q4205 | F-2 | R4213 | G-1 | R4244 | F-2 | R9005 | E-1 |
| Q4206 | F-2 | R4215 | G-2 | R4245 | F-2 | R9007 | E-1 |
| Q4207 | E-1 | R4216 | G-2 | R4246 | E-1 | R9008 | F-2 |
| Q4208 | F-1 | R4217 | G-2 | R4247 | F-1 | R9009 | E-2 |
| Q4209 | E-1 | R4218 | F-2 | R4249 | G-2 | R9010 | E-2 |
| Q4210 | F-1 | R4219 | G-2 | R4250 | E-1 | R9012 | E-2 |
| Q4213 | E-2 | R4221 | G-1 | R4251 | F-1 | R9013 | E-2 |
| Q4214 | E-2 | R4222 | G-1 | R4252 | F-2 | R9015 | F-1 |
| Q4215 | E-2 | R4223 | G-1 | R4255 | E-2 | R9016 | F-2 |
| Q9001 | E-1 | R4224 | G-1 | R4259 | G-2 | R9017 | F-2 |
| D4202 | F-2 | R4225 | G-1 | R4260 | G-2 | R9019 | E-2 |
| D4203 | F-2 | R4226 | G-1 | R4262 | E-1 | R9021 | E-2 |
| D4204 | F-2 | R4227 | G-2 | R4263 | I-1 | C4213 | G-1 |
| D4205 | E-2 | R4228 | G-1 | R4264 | G-1 | C4214 | G-1 |
| D4207 | G-2 | R4230 | G-1 | R4265 | G-1 | C9003 | E-2 |
| R4201 | F-2 | R4231 | G-1 | R4266 | G-1 | C9010 | E-2 |
| R4202 | F-1 | R4232 | G-2 | R4267 | G-1 |       |     |
| R4203 | G-2 | R4233 | G-1 | R4268 | G-2 |       |     |
| R4205 | G-2 | R4235 | F-1 | R4269 | G-2 |       |     |
| R4207 | G-2 | R4237 | F-2 | R4270 | G-2 |       |     |



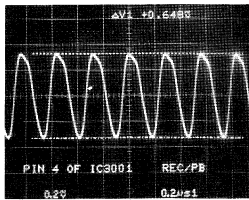
# IR WIRELESS 45 FUNCTION



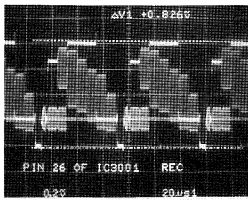
# IR WIRELESS TRANSMITTER UNIT 45 FUNCTION



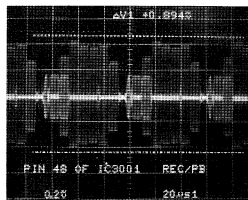
WAVEFORM PHOTOGRAPH



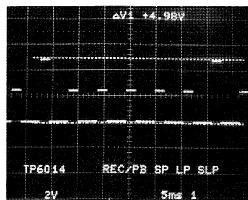
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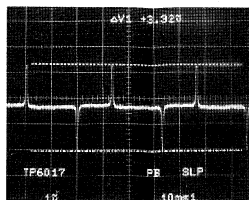
WF8



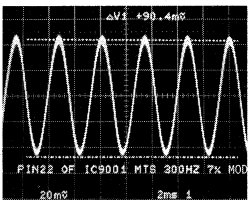
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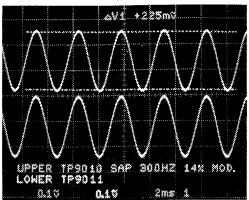
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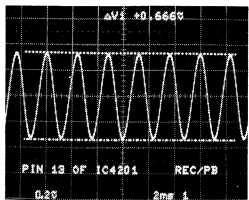
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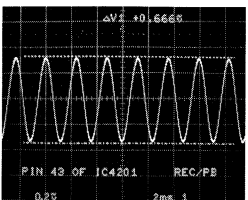
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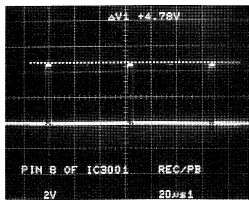
UPPERWF33 LOWERWF34



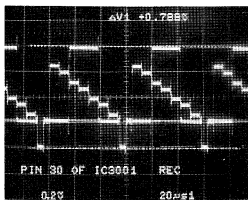
WF40



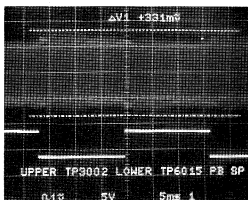
WF47



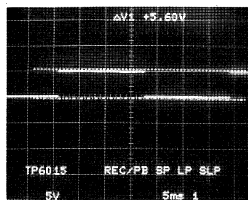
WF2



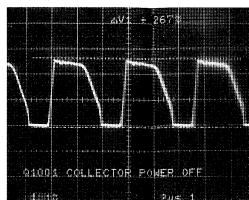
WF9



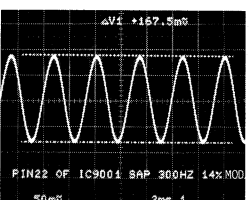
UPPERWF16 LOWERWF22



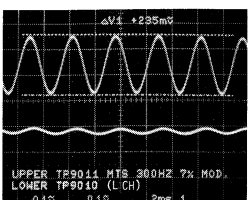
WF22



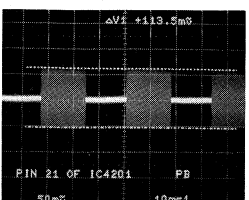
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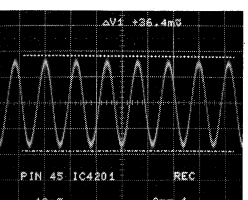
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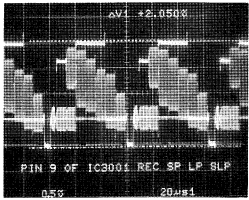
UPPERWF34 LOWERWF33



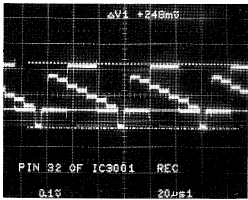
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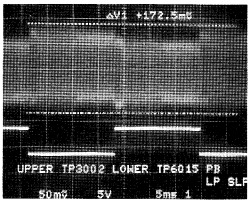
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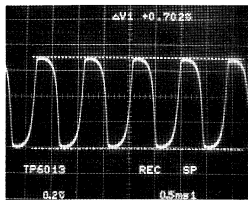
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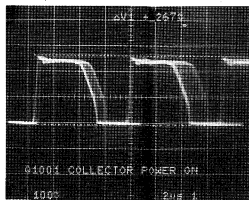
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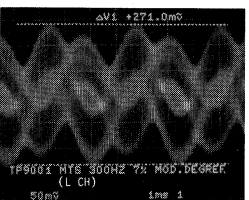
UPPERWF16 LOWERWF22



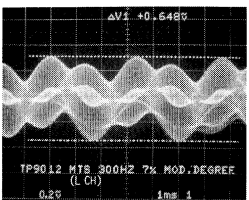
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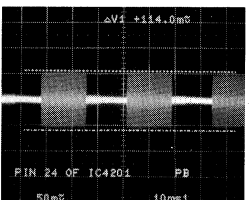
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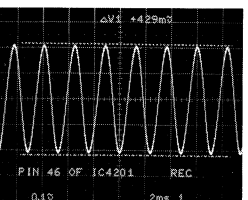
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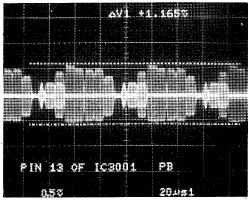
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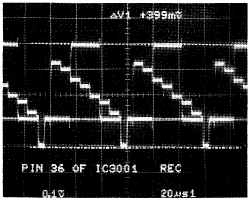
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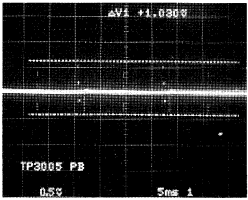
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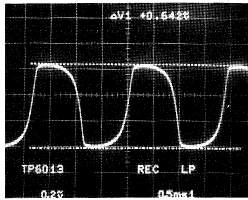
WF4



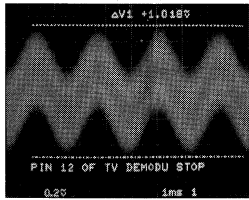
WF11



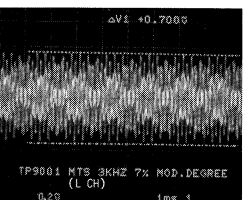
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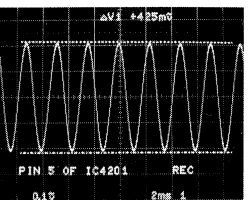
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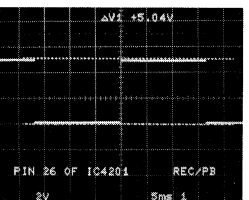
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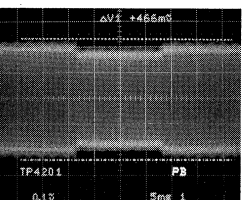
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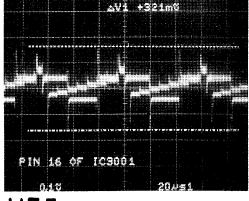
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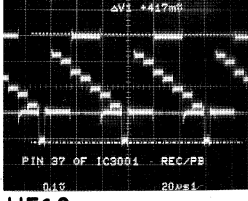
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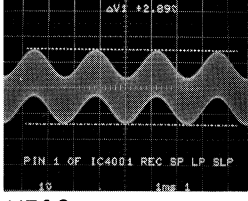
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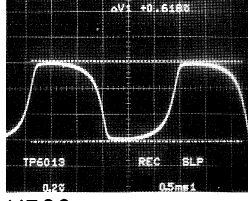
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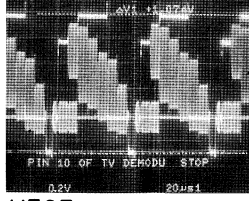
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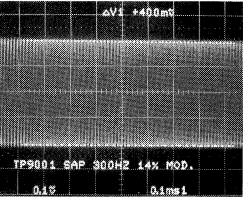
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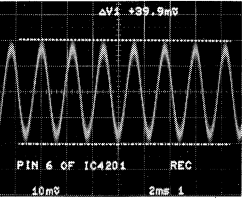
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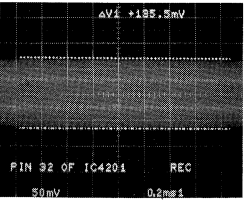
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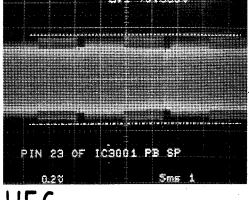
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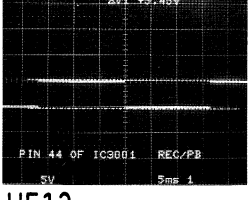
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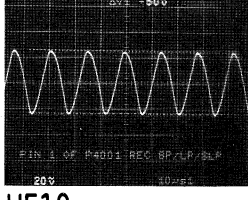
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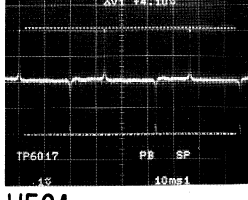
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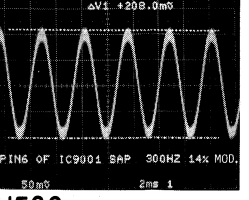
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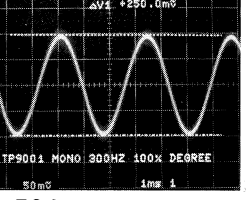
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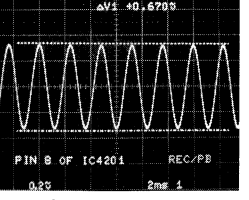
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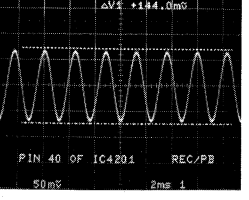
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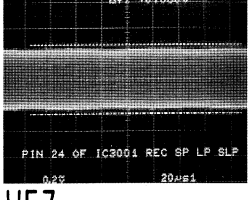
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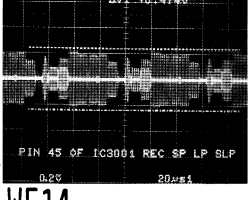
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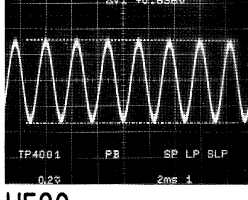
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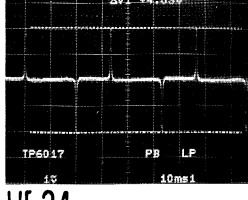
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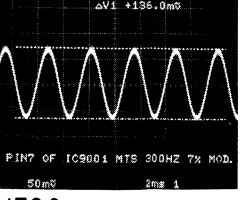
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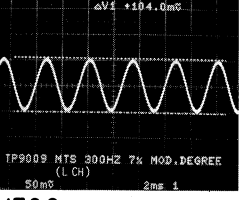
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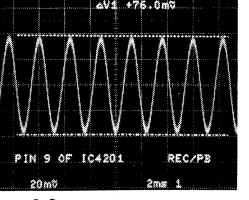
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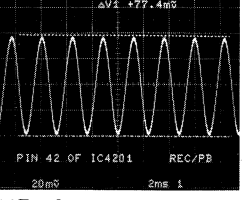
WF29



WF32



WF39



WF46

VOLTAGE CHART

| MODE   | IC2601 |      |      |
|--------|--------|------|------|
| PIN NO | STOP   | FF   | REW  |
| 1      | 14.3   | 14.1 | 14.1 |
| 2      | 14.2   | 14.1 | 14.1 |
| 3      | 0      | 0    | 0    |
| 4      | 0      | 0    | 0    |
| 5      | 0      | 0    | 0    |
| 6      | 2.6    | 2.5  | 2.5  |
| 7      | 4.3    | 4.3  | 4.3  |
| 8      | 0.8    | 1.2  | 1.2  |
| 9      | 1.2    | 0.8  | 0.8  |
| 10     | 1.1    | 1.1  | 1.1  |
| 11     | 5.0    | 5.0  | 5.0  |
| 12     | 4.2    | 4.1  | 4.2  |
| 13     | 4.1    | 4.1  | 4.2  |
| 14     | 3.8    | 3.7  | 3.8  |
| 15     | 5.0    | 5.0  | 5.0  |
| 16     | 14.3   | 14.1 | 14.1 |
| 17     | 14.2   | 14.1 | 14.1 |
| 18     | 0      | 0    | 0    |

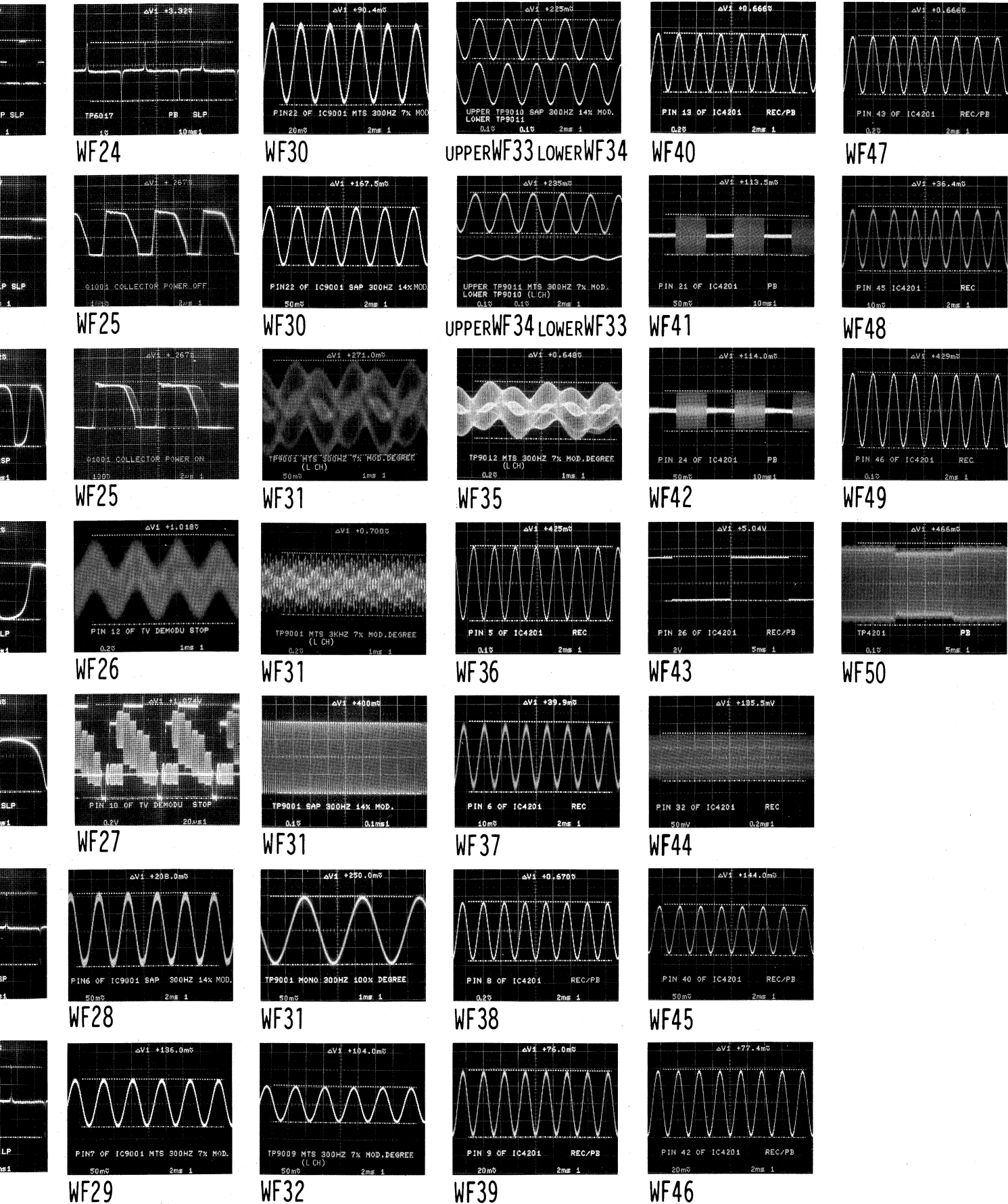
| MODE   | IC2602 |      |      |
|--------|--------|------|------|
| PIN NO | STOP   | FF   | REW  |
| 1      | 13.8   | 13.7 | 13.8 |
| 2      | 2.7    | 4.3  | 4.2  |
| 3      | 14.3   | 14.1 | 14.1 |
| 4      | 14.2   | 13.7 | 13.7 |
| 5      | 2.7    | 4.2  | 4.2  |
| 6      | 14.3   | 14.1 | 14.1 |
| 7      | 14.2   | 13.8 | 13.7 |
| 8      | 2.6    | 4.2  | 4.3  |

| MODE   | IC2603 |      |      |
|--------|--------|------|------|
| PIN NO | STOP   | FF   | REW  |
| 1      | 2.7    | 4.2  | 4.1  |
| 2      | 14.3   | 14.1 | 14.1 |
| 3      | 14.3   | 13.7 | 13.7 |
| 4      | 14.2   | 13.7 | 13.7 |
| 5      | 13.8   | 13.7 | 13.8 |
| 6      | ---    | ---  | ---  |
| 7      | 0.5    | 0.6  | 0.6  |
| 8      | 0      | 0    | 0    |
| 9      | 0.1    | 0.6  | 0.6  |
| 10     | 0      | 0.1  | 0.1  |
| 11     | 0.4    | 0.4  | 0.4  |
| 12     | ---    | ---  | ---  |
| 13     | 3.0    | 3.0  | 2.9  |
| 14     | 5.0    | 5.0  | 5.0  |
| 15     | 1.1    | 2.4  | 2.3  |
| 16     | 2.6    | 2.6  | 2.5  |
| 17     | 2.5    | 0.1  | 4.9  |
| 18     | 1.7    | 1.6  | 1.6  |
| 19     | 1.4    | 1.5  | 1.5  |
| 20     | 1.6    | 1.5  | 1.5  |
| 21     | 1.5    | 1.5  | 1.5  |
| 22     | 1.5    | 1.5  | 1.5  |
| 23     | 1.5    | 1.5  | 1.5  |
| 24     | 1.5    | 1.5  | 1.5  |
| 25     | ---    | ---  | ---  |
| 26     | 2.7    | 4.2  | 4.2  |
| 27     | 0      | 0.1  | 0.1  |
| 28     | 2.7    | 4.3  | 4.2  |

| MODE | PIN NO |
|------|--------|
| 1    | 1      |
| 2    | 2      |
| 3    | 3      |
| 4    | 4      |
| 5    | 5      |
| 6    | 6      |
| 7    | 7      |
| 8    | 8      |
| 9    | 9      |
| 10   | 10     |
| 11   | 11     |
| 12   | 12     |
| 13   | 13     |
| 14   | 14     |
| 15   | 15     |
| 16   | 16     |
| 17   | 17     |
| 18   | 18     |
| 19   | 19     |
| 20   | 20     |
| 21   | 21     |
| 22   | 22     |
| 23   | 23     |
| 24   | 24     |
| 25   | 25     |
| 26   | 26     |
| 27   | 27     |
| 28   | 28     |
| 29   | 29     |
| 30   | 30     |
| 31   | 31     |
| 32   | 32     |
| 33   | 33     |
| 34   | 34     |
| 35   | 35     |
| 36   | 36     |
| 37   | 37     |
| 38   | 38     |
| 39   | 39     |
| 40   | 40     |
| 41   | 41     |
| 42   | 42     |
| 43   | 43     |
| 44   | 44     |
| 45   | 45     |
| 46   | 46     |
| 47   | 47     |
| 48   | 48     |
| 49   | 49     |
| 50   | 50     |
| 51   | 51     |
| 52   | 52     |
| 53   | 53     |
| 54   | 54     |
| 55   | 55     |
| 56   | 56     |
| 57   | 57     |
| 58   | 58     |
| 59   | 59     |
| 60   | 60     |
| 61   | 61     |
| 62   | 62     |
| 63   | 63     |
| 64   | 64     |
| 65   | 65     |
| 66   | 66     |
| 67   | 67     |
| 68   | 68     |
| 69   | 69     |
| 70   | 70     |
| 71   | 71     |
| 72   | 72     |
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| 74   | 74     |
| 75   | 75     |
| 76   | 76     |
| 77   | 77     |
| 78   | 78     |
| 79   | 79     |
| 80   | 80     |
| 81   | 81     |
| 82   | 82     |
| 83   | 83     |
| 84   | 84     |



VOLTAGE CHART



| MODE   | IC2601 |      |      |
|--------|--------|------|------|
| PIN NO | STOP   | FF   | REW  |
| 1      | 14.3   | 14.1 | 14.1 |
| 2      | 14.2   | 14.1 | 14.1 |
| 3      | 0      | 0    | 0    |
| 4      | 0      | 0    | 0    |
| 5      | 0      | 0    | 0    |
| 6      | 2.6    | 2.5  | 2.5  |
| 7      | 4.3    | 4.3  | 4.3  |
| 8      | 0.8    | 1.2  | 1.2  |
| 9      | 1.2    | 0.8  | 0.8  |
| 10     | 1.1    | 1.1  | 1.1  |
| 11     | 5.0    | 5.0  | 5.0  |
| 12     | 4.2    | 4.1  | 4.2  |
| 13     | 4.1    | 4.1  | 4.2  |
| 14     | 3.8    | 3.7  | 3.8  |
| 15     | 5.0    | 5.0  | 5.0  |
| 16     | 14.3   | 14.1 | 14.1 |
| 17     | 14.2   | 14.1 | 14.1 |
| 18     | 0      | 0    | 0    |

| MODE   | IC2602 |      |      |
|--------|--------|------|------|
| PIN NO | STOP   | FF   | REW  |
| 1      | 13.8   | 13.7 | 13.8 |
| 2      | 2.7    | 4.3  | 4.2  |
| 3      | 14.3   | 14.1 | 14.1 |
| 4      | 14.2   | 13.7 | 13.7 |
| 5      | 2.7    | 4.2  | 4.2  |
| 6      | 14.3   | 14.1 | 14.1 |
| 7      | 14.2   | 13.8 | 13.7 |
| 8      | 2.6    | 4.2  | 4.3  |

| MODE   | IC2603 |      |      |
|--------|--------|------|------|
| PIN NO | STOP   | FF   | REW  |
| 1      | 2.7    | 4.2  | 4.1  |
| 2      | 14.3   | 14.1 | 14.1 |
| 3      | 14.3   | 13.7 | 13.7 |
| 4      | 14.2   | 13.7 | 13.7 |
| 5      | 13.8   | 13.7 | 13.8 |
| 6      | ---    | ---  | ---  |
| 7      | 0.5    | 0.6  | 0.6  |
| 8      | 0      | 0    | 0    |
| 9      | 0.1    | 0.6  | 0.6  |
| 10     | 0      | 0.1  | 0.1  |
| 11     | 0.4    | 0.4  | 0.4  |
| 12     | ---    | ---  | ---  |
| 13     | 3.0    | 3.0  | 2.9  |
| 14     | 5.0    | 5.0  | 5.0  |
| 15     | 1.1    | 2.4  | 2.3  |
| 16     | 2.6    | 2.6  | 2.5  |
| 17     | 2.5    | 0.1  | 4.9  |
| 18     | 1.7    | 1.6  | 1.6  |
| 19     | 1.4    | 1.5  | 1.5  |
| 20     | 1.6    | 1.5  | 1.5  |
| 21     | 1.5    | 1.5  | 1.5  |
| 22     | 1.5    | 1.5  | 1.5  |
| 23     | 1.5    | 1.5  | 1.5  |
| 24     | 1.5    | 1.5  | 1.5  |
| 25     | ---    | ---  | ---  |
| 26     | 2.7    | 4.2  | 4.2  |
| 27     | 0      | 0.1  | 0.1  |
| 28     | 2.7    | 4.3  | 4.2  |

| MODE   | IC6001 |     |     |
|--------|--------|-----|-----|
| PIN NO | STOP   | FF  | REW |
| 1      | ---    | --- | --- |
| 2      | 5.0    | 5.0 | 5.0 |
| 3      | 5.0    | 5.0 | 5.0 |
| 4      | 0      | 0   | 0   |
| 5      | 4.8    | 0   | 0   |
| 6      | 3.8    | 3.8 | 3.8 |
| 7      | 0      | 0   | 0   |
| 8      | 5.0    | 5.0 | 5.0 |
| 9      | 5.0    | 0   | 0   |
| 10     | 5.0    | 5.0 | 5.0 |
| 11     | 5.0    | 5.0 | 5.0 |
| 12     | 0      | 0   | 0   |
| 13     | 5.0    | 5.0 | 5.0 |
| 14     | 5.0    | 5.0 | 5.0 |
| 15     | 5.0    | 5.0 | 5.0 |
| 16     | 4.9    | 5.0 | 5.0 |
| 17     | 4.2    | 4.2 | 4.2 |
| 18     | 1.9    | 1.8 | 1.8 |
| 19     | 4.8    | 4.9 | 4.9 |
| 20     | 5.0    | 5.0 | 5.0 |
| 21     | 0      | 0   | 0   |
| 22     | 5.0    | 0   | 0   |
| 23     | 0      | 0   | 0   |
| 24     | 2.5    | 2.5 | 2.5 |
| 25     | 0      | 2.6 | 2.6 |
| 26     | 2.5    | 2.5 | 2.5 |
| 27     | 0      | 0   | 0   |
| 28     | 2.1    | 2.0 | 2.0 |
| 29     | ---    | --- | --- |
| 30     | 4.9    | 4.9 | 4.9 |
| 31     | 2.5    | 2.5 | 2.5 |
| 32     | 2.4    | 2.4 | 2.4 |
| 33     | 0      | 0   | 0   |
| 34     | 5.0    | 5.0 | 5.0 |
| 35     | 0      | 0   | 0   |
| 36     | 0      | 0   | 0   |
| 37     | 0      | 0   | 0   |
| 38     | 0.9    | 1.0 | 1.0 |
| 39     | 1.1    | 2.4 | 2.4 |
| 40     | 2.5    | 4.9 | 4.9 |
| 41     | 4.9    | 5.0 | 5.0 |
| 42     | 0.1    | 0   | 0.1 |
| 43     | 5.0    | 5.0 | 5.0 |
| 44     | 2.5    | 2.5 | 2.5 |
| 45     | 2.5    | 2.5 | 2.5 |
| 46     | 2.5    | 2.5 | 2.5 |
| 47     | 5.0    | 5.0 | 5.0 |
| 48     | 0      | 0   | 0   |
| 49     | 0      | 0   | 0   |
| 50     | 2.5    | 2.5 | 2.5 |
| 51     | 2.5    | 2.5 | 2.5 |
| 52     | 2.3    | 2.3 | 2.3 |
| 53     | 2.8    | 2.8 | 2.8 |
| 54     | 5.0    | 5.0 | 5.0 |
| 55     | 0      | 0   | 0   |
| 56     | 0      | 0   | 0   |
| 57     | 0      | 0   | 0   |
| 58     | 2.5    | 2.5 | 2.5 |
| 59     | 2.5    | 2.5 | 2.5 |
| 60     | 0      | 0   | 0   |
| 61     | ---    | --- | --- |
| 62     | 2.6    | 2.7 | 2.6 |
| 63     | 5.0    | 5.0 | 5.0 |
| 64     | 2.5    | 2.6 | 2.5 |
| 65     | 3.8    | 3.9 | 3.8 |
| 66     | 0.4    | 3.1 | 3.0 |
| 67     | 2.2    | 3.2 | 3.2 |
| 68     | 4.5    | 2.2 | 2.3 |
| 69     | 0      | 0   | 0   |
| 70     | 5.0    | 5.0 | 5.0 |
| 71     | 0      | 0   | 0   |
| 72     | 0      | 0.7 | 0.7 |
| 73     | 4.9    | 5.0 | 5.0 |
| 74     | 5.0    | 5.1 | 5.0 |
| 75     | 5.0    | 5.0 | 5.0 |
| 76     | 5.0    | 5.0 | 5.0 |
| 77     | 1.2    | 2.5 | 2.5 |
| 78     | 0.2    | 0.1 | 0.1 |
| 79     | 0      | 0.1 | 0.1 |
| 80     | 0.2    | 0.2 | 0.2 |
| 81     | 5.0    | 5.0 | 5.0 |
| 82     | 5.0    | 5.0 | 5.0 |
| 83     | 5.0    | 0   | 0   |
| 84     | 0      | 0   | 0   |

| MODE   | IC6003 |     |     |
|--------|--------|-----|-----|
| PIN NO | STOP   | FF  | REW |
| 1      | 0.7    | 0.7 | 0.7 |
| 2      | 1.3    | 1.3 | 1.3 |
| 3      | 1.3    | 1.3 | 1.3 |
| 4      | 0      | 0   | 0   |
| 5      | 1.3    | 2.6 | 2.5 |
| 6      | 1.3    | 2.6 | 2.5 |
| 7      | 1.1    | 2.4 | 2.4 |
| 8      | 5.0    | 5.0 | 5.0 |

| MODE   | IC6004 |     |     |
|--------|--------|-----|-----|
| PIN NO | STOP   | FF  | REW |
| 1      | 0      | 0   | 0   |
| 2      | 4.8    | 0   | 0   |
| 3      | 2.5    | 2.3 | 2.4 |
| 4      | 0      | 0   | 0   |
| 5      | 2.5    | 2.6 | 2.6 |
| 6      | 0      | 0   | 0   |
| 7      | 5.0    | 5.0 | 5.0 |

| MODE     | STOP |      |     | FF  |      |     | REW |      |     |
|----------|------|------|-----|-----|------|-----|-----|------|-----|
| TR NO. \ | E    | C    | B   | E   | C    | B   | E   | C    | B   |
| Q6002    | 0    | 14.1 | 0   | 0   | 14.1 | 0   | 0   | 14.1 | 0   |
| Q6003    | 5.0  | 0    | 5.0 | 5.0 | 0    | 5.0 | 5.0 | 0    | 5.0 |
| Q6004    | 0    | 14.0 | 0   | 0   | 13.8 | 0   | 0   | 13.8 | 0   |
| Q6005    | 0    | 1.0  | 0.3 | 0   | 6.3  | 0.5 | 0   | 6.3  | 0.5 |
| Q6006    | 1.1  | 1.1  | 0.5 | 2.4 | 2.5  | 5.0 | 2.4 | 2.5  | 5.0 |
| Q6008    | 5.0  | 0    | 5.0 | 5.0 | 0    | 5.0 | 5.0 | 0    | 5.0 |
| Q6009    | 0    | 5.1  | 0   | 0   | 5.1  | 0   | 0   | 5.1  | 0   |
| Q6010    | 0    | 12.2 | 0   | 0   | 12.2 | 0   | 0   | 12.2 | 0   |
| Q6011    | 0    | 12.0 | 0   | 0   | 12.0 | 0   | 0   | 12.0 | 0   |
| Q6014    | 0    | 0    | 5.0 | 0   | 0.1  | 5.1 | 0   | 0.1  | 5.1 |
| Q6015    | 5.0  | 4.9  | 4.2 | 5.0 | 4.9  | 4.2 | 5.0 | 4.9  | 4.2 |

| MODE   | STOP | FF  | REW |
|--------|------|-----|-----|
| TP NO. |      |     |     |
| TP6001 | 5.0  | 5.0 | 5.0 |
| TP6002 | 5.0  | 5.0 | 5.0 |
| TP6003 | 3.8  | 3.8 | 3.8 |
| TP6011 | 2.5  | 2.5 | 2.5 |
| TP6012 | 2.5  | 2.5 | 2.5 |
| TP6013 | 2.5  | 2.5 | 2.5 |
| TP6014 | 5.0  | 5.0 | 5.0 |
| TP6015 | 5.0  | 0   | 0   |
| TP6016 | 0    | 0   | 0   |
| TP6017 | 2.6  | 2.7 | 2.6 |
| TP6018 | 1.3  | 1.3 | 1.3 |
| TP6019 | 5.0  | 5.0 | 5.0 |

# EXPLODED VIEWS

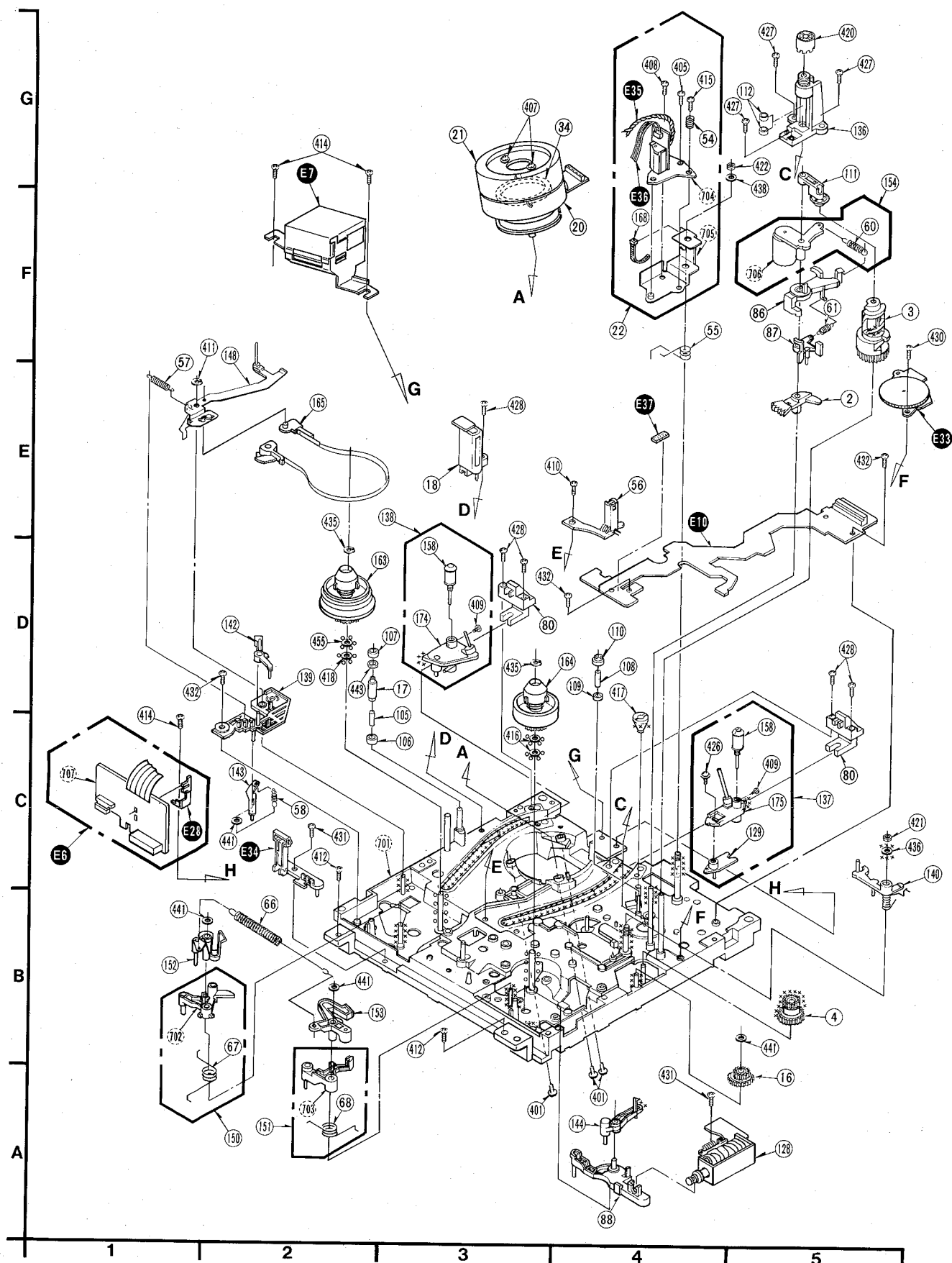
## 1 Transport Section

### Note: 1. LUBRICATION POINTS

When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

| Mark | Kind of Lubricant | Availability                 | Part Number |
|------|-------------------|------------------------------|-------------|
| xxx  | Molytone Grease   | Available From Factory       | MOR265      |
| ooo  | Spindle Oil       | Purchase From Local Supplier | .....       |
| aaa  | Gummed Adhesive   | Purchase From Local Supplier | .....       |

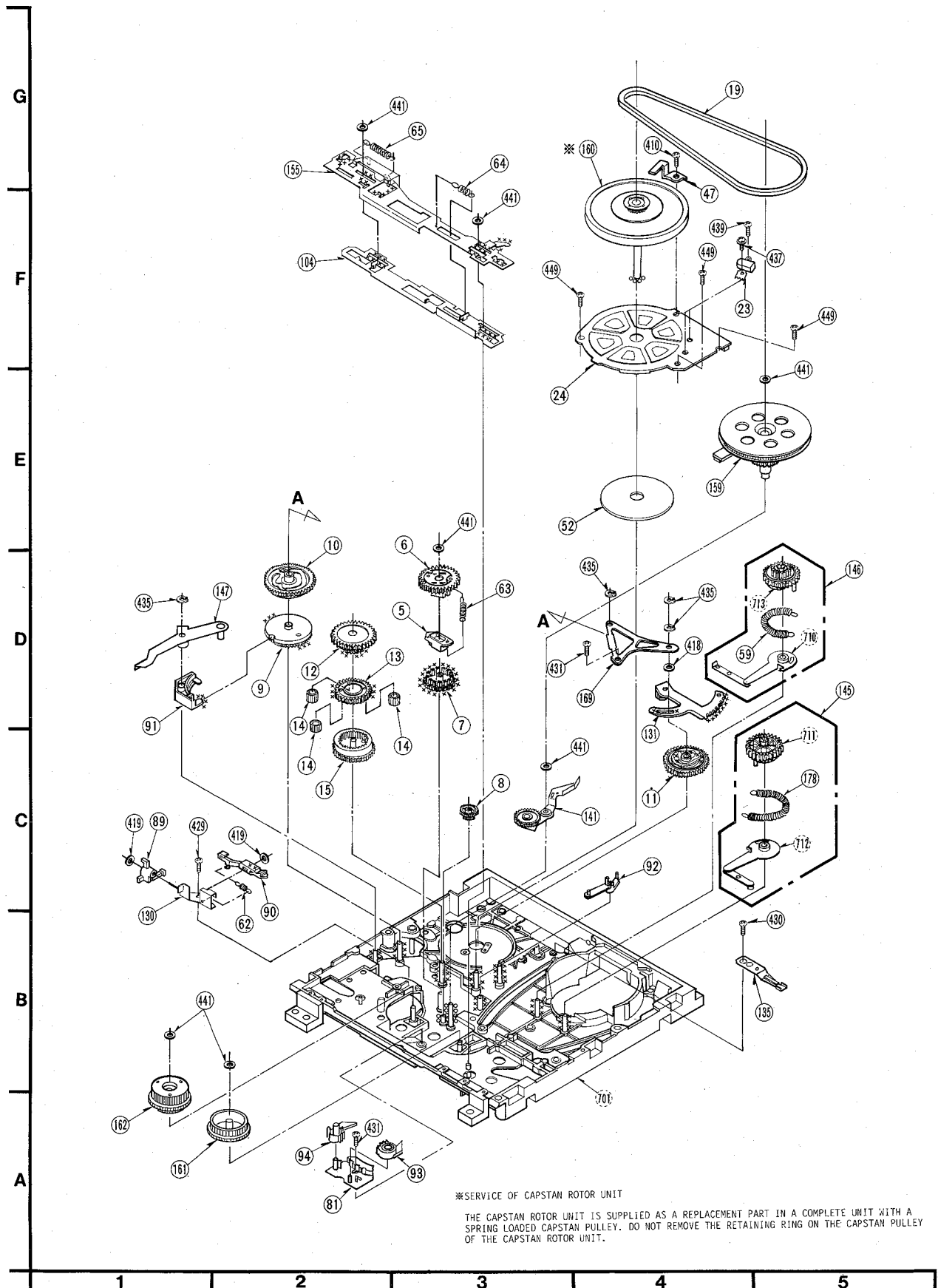
2. Parts with Item No.700 series with  are not supplied as replacement parts.



## ② Moving Mechanism Section

LUBRICATION POINTS  
When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

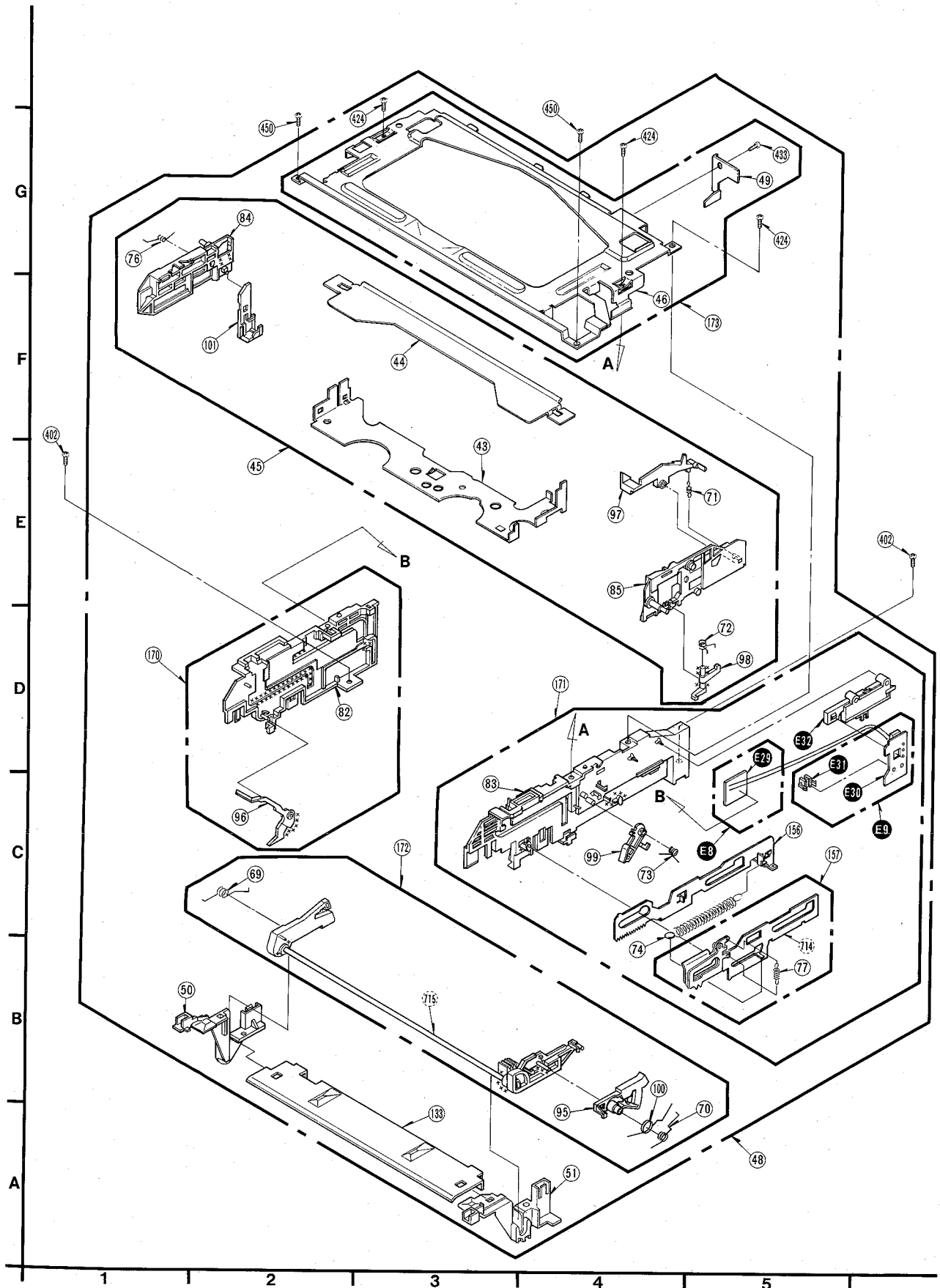
| Mark | Kind of Lubricant | Availability                 | Part Number |
|------|-------------------|------------------------------|-------------|
| xxx  | Molytane Grease   | Available From Factory       | MOR265      |
| ooo  | Spindle Oil       | Purchase From Local Supplier | .....       |
| △△△  | Gummed Adhesive   | Purchase From Local Supplier | .....       |



### 3 Cassette Up Mechanism Section

LUBRICATION POINTS  
When the marked parts are replaced, apply the recommended Lubricants or adhesive for better maintenance of the unit.

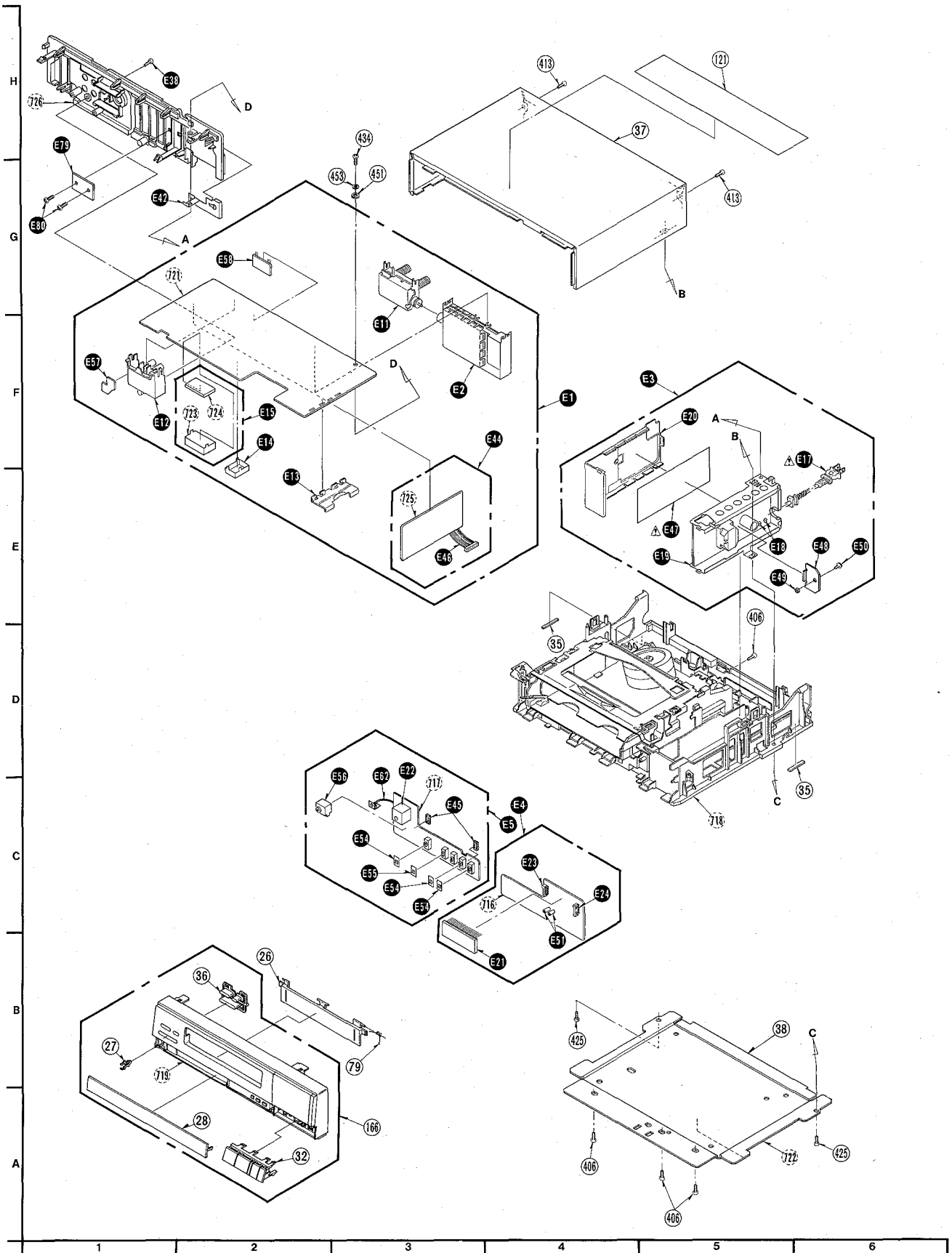
| Mark | Kind of Lubricant | Availability                 | Part Number |
|------|-------------------|------------------------------|-------------|
| xxx  | Molytone Grease   | Available From Factory       | MOR265      |
| ooo  | Spindle Oil       | Purchase From Local Supplier | .....       |
| aaa  | Gummed Adhesive   | Purchase From Local Supplier | .....       |



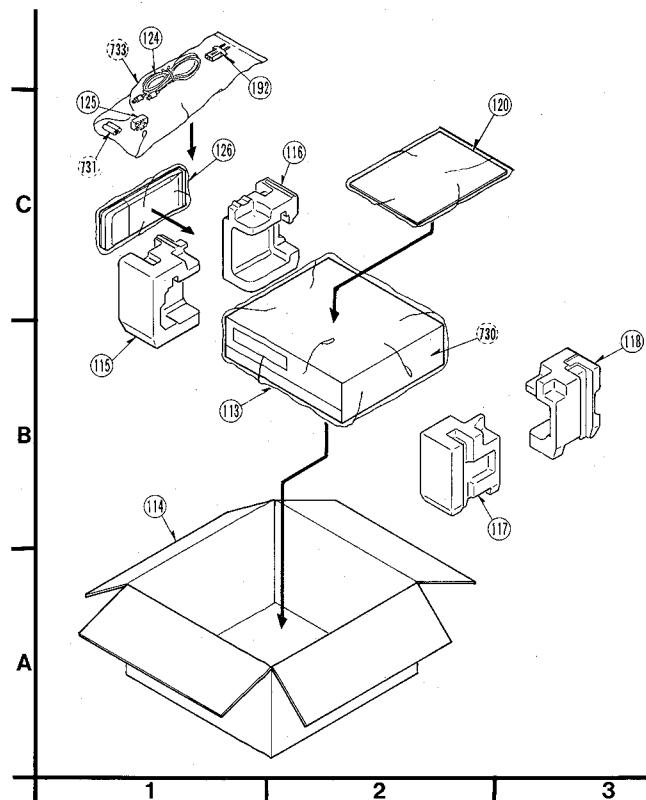


## 4 Chassis Frame & Casing Parts Section

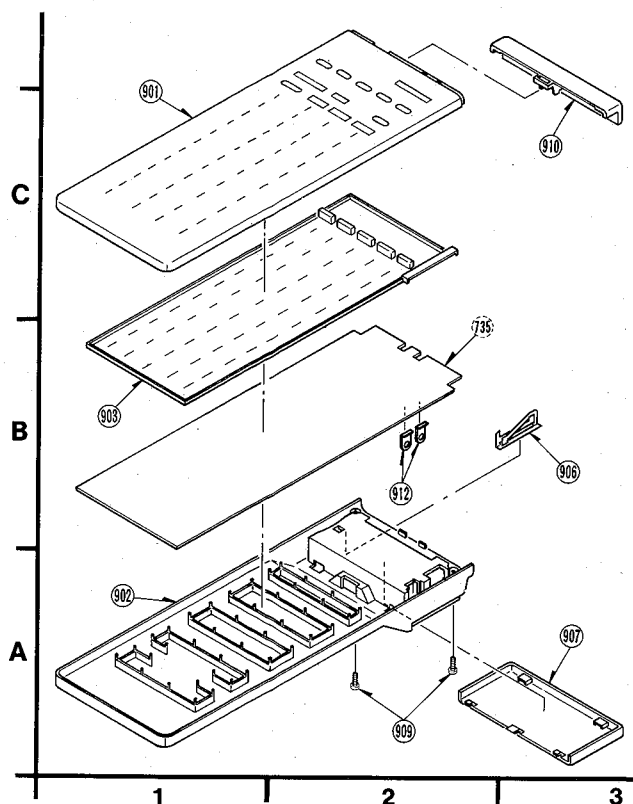
IMPORTANT SAFETY NOTICE:  
COMPONENTS IDENTIFIED BY THE SIGN  HAVE  
SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY.  
WHEN REPLACING ANY OF THESE COMPONENTS, USE  
ONLY THE SPECIFIED PARTS.



## 5 Packing Parts & Accessories Section

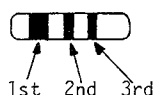


## 6 IR Wireless Transmitter Unit Section



# REPLACEMENT PARTS LIST

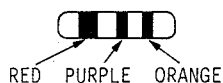
## HOW TO READ THE VALUES OF THE CYLINDRICAL TYPE CHIP COMPONENTS.



THE WIDEST COLOR BAND MUST BE READ FIRST FOR VALUE.

EXAMPLE :

(a) RESISTOR



= 273 = 27 [kΩ]

NOTE : THERE ARE TWO TYPE(ERD10LLJ... AND ERD10TLJ... ) OF THE CHIP PARTS.

- 1) ERD10LLJ : REFER TO ABOVE TYPE.
- 2) ERD10TLJ : THE NARROW COLOR BAND MUST BE READ FIRST FOR VALUE.

NOTE : THIS PART IS NOT USED FOR THESE MODELS, WHEN SERVICING BE CAREFUL A WAY OF THIS COLOR BAND READING.

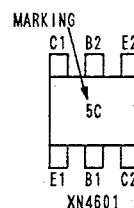
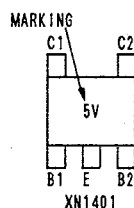
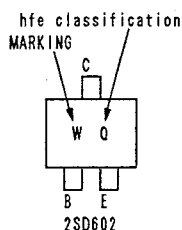
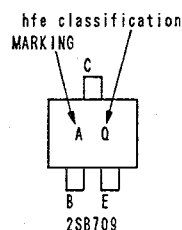
(b) : CAPACITOR

BECAUSE OF THE WIDTH OF COLOR BANDS, THE READING DIRECTION CAN NOT BE SPECIFIED. HOWEVER THE COLOR BAND CAN BE READ EITHER SIDE.  
BE SURE TO CONFIRM THE VALUE USING THE SCHEMATIC DIAGRAM.

CAUTION : ONCE CHIP PARTS (RESISTORS, CAPACITORS, TRANSISTORS, ETC) ARE REMOVED THEY MUST NOT BE REUSED, ALWAYS USE A NEW PART WHEN ADDING A CHIP PART.

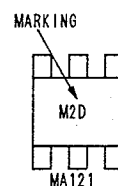
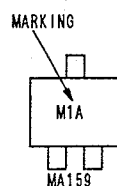
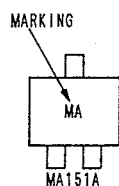
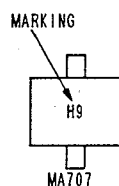
## HOW TO READ THE IDENTIFICATION MARK OF CHIP TRANSISTORS IN THIS UNIT.

| MARKING | PARTS NO. | MARKING | PARTS NO. |
|---------|-----------|---------|-----------|
| A       | 2SB709    | 6C      | UN2113    |
| B       | 2SC2412K  | 8B      | UN2212    |
| W       | 2SD602    | 8C      | UN2213    |
| Y       | 2SD601    | 16      | DTA144EK  |
| 6B      | UN2112    | 26      | DTC144EK  |



## HOW TO READ THE IDENTIFICATION MARK OF CHIP DIODES IN THIS UNIT.

| MARKING | PARTS NO. |
|---------|-----------|
| MA      | MA151A    |
| MH      | MA151K    |
| MT      | MA151WK   |



# MECHANICAL REPLACEMENT PARTS LIST

Model No. NV-F65PX

ONLY USE ORIGINAL VIDEO REPLACEMENT PARTS: Maintain original FUNCTION and RELIABILITY of repaired units, only use ORIGINAL REPLACEMENT PARTS which are listed with their part numbers in the parts list section of the Service Manual.

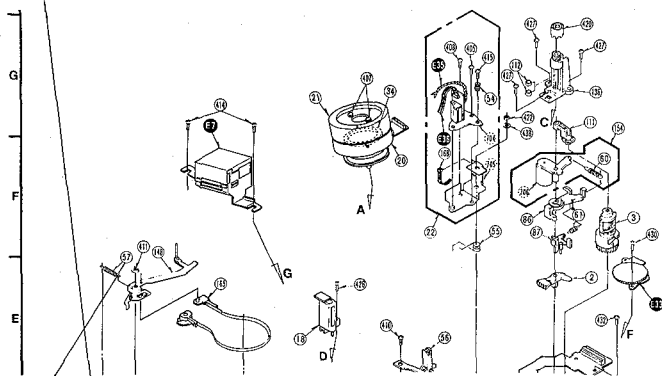
Note:

1. Be sure to make your orders of replacement parts according to this list.

<The complete Exploded views are shown in this manual.>

## EXPLODED VIEWS

### ① Transport Section



| Item No. | Drawing No. | Description                    | Pcs/Set | Part No. | Remark |
|----------|-------------|--------------------------------|---------|----------|--------|
| 2        | 1           | P5 SECTOR GEAR                 | 1       | VDG50200 |        |
| 3        | 1           | PRESSURE ROLLER LIFT CAM       | 1       | VDG50191 |        |
| 4        | 1           | RELEASE GEAR                   | 1       | VDG50129 |        |
| 5        | 2           | LOCK SLIDE GEAR                | 1       | VDG50132 |        |
| 6        | 2           | CLUTCH GEAR                    | 1       | VDG50133 |        |
| 7        | 2           | DRIVE GEAR                     | 1       | VDG50134 |        |
| 8        | 2           | INTERMEDIATE GEAR              | 1       | VDG50202 |        |
| 9        | 2           | SUB CAM GEAR                   | 1       | VDG50136 |        |
| 10       | 2           | MAIN CAM GEAR                  | 1       | VDG50137 |        |
| 11       | 2           | LOADING CAM GEAR               | 1       | VDG50138 |        |
| 12       | 2           | SUN GEAR                       | 1       | VDG50245 |        |
| 13       | 2           | RETAINER GEAR                  | 1       | VDG50140 |        |
| 14       | 2           | PLANETARY GEAR                 | 3       | VDG50141 |        |
| 15       | 2           | RING GEAR                      | 1       | VDG50142 |        |
| 16       | 1           | LINK GEAR                      | 1       | VDG50180 |        |
| 17       | 1           | SUPPLY ROLLER                  | 1       | VDPS0127 |        |
| 18       | 1           | FULL ERASE HEAD UNIT           | 1       | VEHS0261 |        |
| 19       | 2           | CAPSTAN BELT                   | 1       | VDVS0057 |        |
| 20       | 1           | D.O CYLINDER UNIT              | 1       | VEGS0244 |        |
| 21       | 1           | UPPER CYLINDER UNIT            | 1       | VEHS0273 |        |
| 22       | 1           | A/C HEAD UNIT                  | 1       | VEHS0280 |        |
| 23       | 2           | FG HEAD                        | 1       | VBKS0013 |        |
| 24       | 2           | CAPSTAN STATOR UNIT            | 1       | VEMS0192 |        |
| 26       | 4           | CASSETTE DOOR                  | 1       | VGPS1763 |        |
| 27       | 4           | DOOR CLAMPER                   | 1       | VGQS0374 |        |
| 28       | 4           | FRONT DOOR                     | 1       | VKFS0741 |        |
| 32       | 4           | FRONT PANEL CONTROL RACK       | 1       | VGUS2267 |        |
| 34       | 1           | RT CONNECTION TERMINAL         | 1       | VJRS0061 |        |
| 35       | 4           | RUBBER FOOT                    | 2       | VKAS0027 |        |
| 36       | 4           | POWER BUTTON                   | 1       | VGUS2268 |        |
| 37       | 4           | TOP COVER                      | 1       | VKMS0939 |        |
| 38       | 4           | BOTTOM PANEL                   | 1       | VKUS0192 |        |
| 43       | 3           | CASSETTE HOLDER -BOTTOM        | 1       | VMA51480 |        |
| 44       | 3           | TAPE REMAIN INDICATOR          | 1       | VXAS0737 |        |
| 45       | 3           | CASSETTE HOLDER UNIT           | 1       | VXAS1254 |        |
| 46       | 3           | CASSETTE COMPARTMENT TOP PLATE | 1       | VMA51561 |        |
| 47       | 2           | CAPSTAN STATOR STOPPER         | 1       | VMA51358 |        |
| 48       | 3           | CASSETTE UP UNIT               | 1       | VXAS1339 |        |
| 49       | 3           | CASSETTE OPENER ANGLE          | 1       | VMA51374 |        |
| 50       | 3           | CASSETTE GUIDE -L              | 1       | VMA51679 |        |
| 51       | 3           | CASSETTE GUIDE -R              | 1       | VMA51680 |        |
| 52       | 2           | SUB PLATE                      | 1       | VMA51470 |        |
| 54       | 1           | ADJUST SPRING                  | 1       | VMBS0741 |        |
| 55       | 1           | A/C HEIGHT SPRING              | 1       | VMBS0791 |        |
| 56       | 1           | SENSOR LED UNIT                | 1       | VXDS0072 |        |
| 57       | 1           | TENSION SPRING                 | 1       | VMBS0714 |        |
| 58       | 1           | TENSION RELEASE ARM SPRING     | 1       | VMBS0587 |        |
| 59       | 2           | LOADING SPRING                 | 1       | VMBS0701 |        |

| Item No. | Drawing No. | Description                   | Pcs/Set | Part No. | Remark |
|----------|-------------|-------------------------------|---------|----------|--------|
| 60       | 1           | PRESSURE ROLLER SPRING -1     | 1       | VMBS0702 |        |
| 61       | 1           | PRESSURE ROLLER ARM SPRING -2 | 1       | VMBS0590 |        |
| 62       | 2           | RELEASE SPRING                | 1       | VMBS0593 |        |
| 63       | 2           | CLUTCH GEAR SPRING            | 1       | VMBS0594 |        |
| 64       | 2           | MAIN LEVER SPRING             | 1       | VMBS0596 |        |
| 65       | 2           | T SOFT ARM BRAKE SPRING       | 1       | VMBS0704 |        |
| 66       | 1           | MAIN BRAKE SPRING             | 1       | VMBS0705 |        |
| 67       | 1           | S SOFT ARM SPRING             | 1       | VMBS0706 |        |
| 68       | 1           | SOFT BRAKE SPRING -T          | 1       | VMBS0754 |        |
| 69       | 3           | WIPER SPRING -L               | 1       | VMBS0710 |        |
| 70       | 3           | SUB WIPER SPRING -R           | 1       | VMBS0759 |        |
| 71       | 3           | CASSETTE OPENER SPRING        | 1       | VMBS0607 |        |
| 72       | 3           | RELEASE LEVER SPRING          | 1       | VMBS0709 |        |
| 73       | 3           | SUPPORT SPRING                | 1       | VMBS0761 |        |
| 74       | 3           | DISCRIMINATION LEVER SPRING   | 1       | VMBS0715 |        |
| 76       | 3           | RELEASE LEVER SPRING          | 1       | VMBS0716 |        |
| 77       | 3           | RACK SPRING -B                | 1       | VMBS0613 |        |
| 79       | 4           | CASSETTE DOOR SPRING          | 1       | VMBS0757 |        |
| 80       | 1           | V-STOPPER                     | 2       | VMDS0446 |        |
| 81       | 2           | STOPPER BASE                  | 1       | VMDS0528 |        |
| 82       | 3           | SIDE PLATE -L                 | 1       | VMDS0582 |        |
| 83       | 3           | SIDE PLATE -R                 | 1       | VMDS0584 |        |
| 84       | 3           | CASSETTE HOLDER GUIDE -L      | 1       | VMDS0489 |        |
| 85       | 3           | CASSETTE HOLDER GUIDE -R      | 1       | VMDS0525 |        |
| 86       | 1           | PRESSURE ROLLER ARM -1        | 1       | VMLS0508 |        |
| 87       | 1           | PRESSURE ROLLER LIFT ARM      | 1       | VMLS0634 |        |
| 88       | 1           | SOLENOID LEVER                | 1       | VMLS0510 |        |
| 89       | 2           | CHANGE LEVER                  | 1       | VMLS0512 |        |
| 90       | 2           | RELEASE LEVER                 | 1       | VXAS1186 |        |
| 91       | 2           | DETENT ARM                    | 1       | VMLS0514 |        |
| 92       | 2           | PLAY SET ARM                  | 1       | VMLS0524 |        |
| 93       | 2           | FF/REW RELEASE LEVER -L       | 1       | VMLS0650 |        |
| 94       | 2           | FF/REW RELEASE LEVER -R       | 1       | VMLS0649 |        |
| 95       | 3           | SUB WIPER ARM -R              | 1       | VMLS0643 |        |
| 96       | 3           | CASSETTE DOOR LEVER           | 1       | VMLS0645 |        |
| 97       | 3           | CASSETTE OPENER               | 1       | VMLS0677 |        |
| 98       | 3           | RELEASE LEVER                 | 1       | VMLS0532 |        |
| 99       | 3           | DOWN SUPPORT LEVER            | 1       | VMLS0652 |        |
| 100      | 3           | WIPER SPRING -R               | 1       | VMBS0758 |        |
| 101      | 3           | HOLDER GUIDE LEVER -L         | 1       | VMLS0676 |        |
| 104      | 2           | SUB LEVER                     | 1       | VMLS0042 |        |
| 105      | 1           | COLLAR                        | 1       | VMXS0432 |        |
| 106      | 1           | SUPPLY LIMITER                | 1       | VMXS0568 |        |
| 107      | 1           | SUPPLY UPPER LIMITER          | 1       | VMXS0483 |        |
| 108      | 1           | P4 SLEEVE                     | 1       | VMXS0566 |        |
| 109      | 1           | P4 LIMITER                    | 1       | VMXS0567 |        |
| 110      | 1           | P4 UPPER LIMITER              | 1       | VMXS0553 |        |
| 111      | 1           | PRESSURE CAM CAP              | 1       | VMXS0632 |        |
| 112      | 1           | OIL SEAL                      | 2       | VMXS0511 |        |
| 113      | 5           | POLYETHYLENE SHEET            | 1       | VPFS0095 |        |
| 114      | 5           | PACKING CASE                  | 1       | VPGS2306 |        |
| 115      | 5           | LEFT CUSHION -FRONT           | 1       | VPNS0333 |        |
| 116      | 5           | LEFT CUSHION -REAR            | 1       | VPNS0334 |        |
| 117      | 5           | RIGHT CUSHION -FRONT          | 1       | VPNS0335 |        |
| 118      | 5           | RIGHT CUSHION -REAR           | 1       | VPNS0336 |        |
| 120      | 5           | FAN BAG                       | 1       | VQFS2037 |        |
| 121      | 4           | STICKER                       | 1       | VQLS2563 |        |
| 124      | 5           | VHF CONNECTING CABLE          | 1       | VJAS0060 |        |
| 125      | 5           | VHF ANTENNA ADAPTOR           | 1       | VJSQ0513 |        |
| 126      | 5           | IR WIRELESS TRANSMITTER UNIT  | 1       | VJSQ0847 |        |
| 128      | 1           | SOLENOID UNIT                 | 1       | VJSJ0018 |        |
| 129      | 1           | SHAFT HOLDER PLATE            | 1       | VXAS1269 |        |
| 130      | 2           | RELEASE LEVER UNIT            | 1       | VXAS1051 |        |
| 131      | 2           | SECTOR GEAR UNIT              | 1       | VXAS1262 |        |
| 133      | 3           | CASSETTE GUIDE                | 1       | VXAS1141 |        |
| 135      | 2           | GROUNDING ANGLE               | 1       | VXBS0037 |        |
| 136      | 1           | CAPSTAN HOLDER UNIT           | 1       | VXDS0065 |        |
| 137      | 1           | LOADING POST T UNIT           | 1       | VXDS0070 |        |
| 138      | 1           | LOADING POST S UNIT           | 1       | VXDS0056 |        |
| 139      | 1           | TENSION ARM BASE UNIT         | 1       | VXDS0073 |        |
| 140      | 1           | P5 ARM UNIT                   | 1       | VXLS0608 |        |
| 141      | 2           | PLAY ARM UNIT                 | 1       | VXLS0571 |        |
| 142      | 1           | TENSION RELEASE ARM -A        | 1       | VXLS0482 |        |
| 143      | 1           | TENSION RELEASE ARM -B        | 1       | VXLS0483 |        |
| 144      | 1           | KICK ROD UNIT                 | 1       | VXLS0484 |        |



# ELECTRICAL REPLACEMENT PARTS LIST

Model No. NV-F65PX

ONLY USE ORIGINAL VIDEO REPLACEMENT PARTS: Maintain original FUNCTION and RELIABILITY of repaired units, only use ORIGINAL REPLACEMENT PARTS which are listed with their part numbers in the part list section of the Service Manual.

## Special Note:

All integrated circuits and many other semiconductor devices are electrostatically sensitive and therefore require the special handling techniques described under the "Electrostatically Sensitive (ES) Devices" section of this service manual.

## Note:

1. Be sure to make your orders of replacement parts according to this list.

## 2. IMPORTANT SAFETY NOTICE

Components identified by the sign  have special characteristics important for safety.

When replacing any of these components, use only the specified parts.

## 3. Unless otherwise specified:

All resistors are in OHMS ( $\Omega$ ), 1/4W,  $\pm 5\%$ , carbon, K=1,000 $\Omega$ , M=1,000K $\Omega$ .

All capacitors are in MICROFARADS (UF), P=UF,  $\pm 10\%$ .

All coils are in MICROHENRIES (UH), M=10UH,  $\pm 10\%$ .

4. C.B.A: Circuit Board Assembly.

5. P.C.B: Printed Circuit Board.

6. E.S.D: Electrostatically Sensitive Devices.

## 7. ITEM NUMBERS WITH CAPITAL LETTER E

Item numbers with capital letter E (Example: E1, E2,...) in Ref. No. column mean that parts so listed are shown with the E item numbers in the exploded views.

The E item numbers are also printed on the same page at the top of the column.

8. The parts with  are assembly parts or units.

The parts with  are assembly parts or units which belong to parts with  right above them in printed circuit board assembly & unit list.

## 9. SERVICE OF CHIP PARTS

When servicing chip parts, please use a soldering iron of less than 40 watts.

10. Printed circuit board assembly with mark (NLA) is no longer available after discontinuation of the product.

## 11. List of Abbreviations for Part Name & Description:

MGF CHIP: METAL GLAZE FILM CHIP

C CHIP: CERAMIC CHIP

COMPLX CMP: COMPLEX COMPONENT

W FLMPRF: WIREWOUND FLAMEPROOF

(E1, E2, E3, E4, E5, E6, E7, E8, E9, E10, E44, E57, E58, E79)

| Ref No. | Part No.                                                                                        | Part Name & Description        | Pcs<br>Set | Remarks      |
|---------|-------------------------------------------------------------------------------------------------|--------------------------------|------------|--------------|
|         |                                                                                                 | PRINTED CIRCUIT BOARD ASSEMBLY |            |              |
| E1      |  VEPS02121AV1 | MAIN C.B.A.                    | 1          | E.S.D. (NLA) |
| E44     |  VEPS0463A1  | HI-FI AUDIO/MTS/SAP C.B.A.     | 1          | E.S.D. (NLA) |
| E57     |  VEPS00761A1 | SYNCHRO TERMINAL C.B.A.        | 1          | (NLA)        |
| E58     |  VEPS0464A1  | FULL ERASE ASS'Y               | 1          | (NLA)        |
| E2      |  VEQ0439     | UHF/VHF TUNER/TV DEMODULATOR   | 1          | (NLA)        |
|         |                                                                                                 | ASS'Y                          |            |              |
| E3      |  VEPS0184B1  | POWER SUPPLY ASS'Y             | 1          | (NLA)        |
| E4      |  VEPS07274E1 | TIMER/OPERATION I C.B.A.       | 1          | E.S.D. (NLA) |
| E5      |  VEPS07275A1 | TIMER/OPERATION II C.B.A.      | 1          | (NLA)        |
| E6      |  VEPS02122A1 | CAPSTAN/CYLINDER MOTOR DRIVE   | 1          | (NLA)        |
|         |                                                                                                 | C.B.A.                         |            |              |
| E7      |  VEQ0435     | HEAD AMP C.B.A. UNIT           | 1          |              |
| E79     |  VEPS00789A1 | US/PX SELECT SWITCH C.B.A.     | 1          | (NLA)        |
| E8      |  VEPS00553C1 | SUPPLY PHOTO TR ASS'Y          | 1          | (NLA)        |
| E9      |  VEPS00650A1 | TAKEUP PHOTO TR ASS'Y          | 1          | (NLA)        |
| E10     |  VEPS00728A1 | MECHANISM CONNECTION ASS'Y     | 1          | (NLA)        |
|         |              | MAIN C.B.A.                    |            |              |
|         |                                                                                                 | INTEGRATED CIRCUITS            |            |              |
| IC3001  | VCRS0109A                                                                                       | HIC LINEAR LUMA/CHROMA         | 1          |              |
| IC3002  | MN4066B                                                                                         | IC MOS LOGIC INPUT SELECTOR    | 1          | E.S.D.       |
| IC3003  | MB90062-103A                                                                                    | IC MOS LOGIC CHARACTER GEN.    | 1          | E.S.D.       |
| IC3004  | MN3830S                                                                                         | IC MOS LOGIC 2FSC CCD          | 1          | E.S.D.       |
| IC4001  | UPC2308ACA                                                                                      | IC BIPOLAR LINEAR AUDIO        | 1          |              |
|         |                                                                                                 | REC/PB                         |            |              |
| IC4701  | UPC4570HA                                                                                       | IC BIPOLAR LINEAR AMP          | 1          |              |
| IC6001  | MN67520VLS                                                                                      | IC MOS LOGIC SYSTEM            | 1          | E.S.D.       |
|         |                                                                                                 | CTL/SERVO                      |            |              |
| IC6003  | AN1358                                                                                          | IC BIPOLAR LINEAR OP AMP       | 1          |              |
| IC6004  | AN3396                                                                                          | IC BIPOLAR LINEAR ENV.         | 1          |              |
|         |                                                                                                 | DETECT                         |            |              |
|         |                                                                                                 | TRANSISTORS                    |            |              |
| Q1201   | 2SD636(Q, R, S)                                                                                 |                                | 1          |              |
| Q1202   | 2SC3852                                                                                         |                                | 1          |              |
|         | OR 2SD1776(P, Q)                                                                                |                                |            |              |
| Q3002   | 2SD636(Q, R, S)                                                                                 |                                | 1          |              |
| Q3004   | 2SB643(Q, R, S)                                                                                 |                                | 1          |              |
| Q3005   | 2SD636(Q, R, S)                                                                                 |                                | 1          |              |
| Q3007   | 2SD636(Q, R, S)                                                                                 |                                | 1          |              |
| Q3010   | 2SD636(Q, R, S)                                                                                 |                                | 1          |              |
| Q3011   | 2SB641(Q, R, S)                                                                                 |                                | 1          |              |
| Q4001   | 2SD636(R)                                                                                       |                                | 1          |              |

| Ref No.     | Part No.                                                                                        | Part Name & Description | Pcs<br>Set     | Remarks |
|-------------|-------------------------------------------------------------------------------------------------|-------------------------|----------------|---------|
| Q4002       | 2SB643(Q, R, S)                                                                                 |                         | 1              |         |
| Q4003       | UN1212                                                                                          |                         | 1              |         |
| Q4102       | DTA143EA                                                                                        |                         | 1              |         |
| Q6002       | 2SD947                                                                                          |                         | 1              |         |
| Q6003       | 2SB641(Q, R, S)                                                                                 |                         | 1              |         |
| Q6004       | 2SD1225M(Q, R)                                                                                  |                         | 1              |         |
| Q6005       | 2SD636(Q, R, S)                                                                                 |                         | 1              |         |
| Q6006       | 2SB641(Q, R, S)                                                                                 |                         | 1              |         |
| Q6008       | 2SB641(Q, R, S)                                                                                 |                         | 1              |         |
| Q6009       | UN1211                                                                                          |                         | 1              |         |
| Q6010, 6011 | DTC143EA                                                                                        |                         | 2              |         |
| Q6012       | 2SB641(Q, R, S)                                                                                 |                         | 1              |         |
| Q6013       | 2SD636(Q, R, S)                                                                                 |                         | 1              |         |
| Q6014       | UN1212                                                                                          |                         | 1              |         |
| Q6015       | 2SB641(Q, R, S)                                                                                 |                         | 1              |         |
| Q6017       | UN1213                                                                                          |                         | 1              |         |
| Q7001       | 2SD636(Q, R, S)                                                                                 |                         | 1              |         |
| Q7002       | DTC314TS                                                                                        |                         | 1              |         |
| Q7003       | 2SB641(Q, R, S)                                                                                 |                         | 1              |         |
| Q7005, 7006 | 2SD636(Q, R, S)                                                                                 |                         | 2              |         |
|             |                                                                                                 | DIODES                  |                |         |
| D1201       | MA4100N                                                                                         | ZENER                   | 10V 1          |         |
| D1202-1204  | MA165                                                                                           |                         | 3              |         |
| D1205       | MA4068-M                                                                                        | ZENER                   | 6.8V 1         |         |
| D3002       | MA4091-M                                                                                        | ZENER                   | 9.1V 1         |         |
| D6001       | ERA15-01                                                                                        |                         | 1              |         |
| D6002-6011  | MA165                                                                                           |                         | 10             |         |
| D6013       | MA165                                                                                           |                         | 1              |         |
| D6016, 6017 | MA165                                                                                           |                         | 2              |         |
| D7002, 7003 | MA4160-M                                                                                        | ZENER                   | 16V 2          |         |
| D7004       | 04AZ5, 1ZTPA7                                                                                   | ZENER                   | 5.1V 1         |         |
|             |                                                                                                 | RESISTORS               |                |         |
| R1201, 1202 | ERDS2TJ183                                                                                      |                         | 18K 2          |         |
| R1203       | ERD10LLJ472                                                                                     | CHIP                    | 1/8W 4.7K 1    |         |
| R1205       |  ERD2FCG330P |                         | 33 $\pm 2\%$ 1 |         |
| R1208       | ERDS2TJ473                                                                                      |                         | 47K 1          |         |
| R1209       |  ERQ12HJ1R0P | FUSE                    | 1/2W 1 1       |         |
| R3001       | ERD10LLJ680                                                                                     | CHIP                    | 1/8W 68 1      |         |
| R3003       | ERD10LLJ750                                                                                     | CHIP                    | 1/8W 75 1      |         |
| R3004       | ERD10LLJ104                                                                                     | CHIP                    | 1/8W 100K 1    |         |
| R3006, 3007 | ERD10LLJ563                                                                                     | CHIP                    | 1/8W 56K 2     |         |
| R3008       | ERD10LLJ103                                                                                     | CHIP                    | 1/8W 10K 1     |         |
| R3009       | ERD10LLJ332                                                                                     | CHIP                    | 1/8W 3.3K 1    |         |
| R3010       | ERDS2TJ270                                                                                      |                         | 27 1           |         |
| R3012       | ERD10LLJ103                                                                                     | CHIP                    | 1/8W 10K 1     |         |
| R3015       | ERDS2TJ472                                                                                      |                         | 4.7K 1         |         |
| R3016       | ERDS2TJ823                                                                                      |                         | 82K 1          |         |
| R3017       | EVND3AA00B13                                                                                    | VARIABLE                | 1K 1           |         |
| R3018       | ERD10LLJ221                                                                                     | CHIP                    | 1/8W 220 1     |         |
| R3020, 3021 | ERD10LLJ473                                                                                     | CHIP                    | 1/8W 47K 2     |         |
| R3022       | ERD10LLJ153                                                                                     | CHIP                    | 1/8W 15K 1     |         |
| R3023       | ERD10LLJ272                                                                                     | CHIP                    | 1/8W 2.7K 1    |         |
| R3029       | ERD10LLJ122                                                                                     | CHIP                    | 1/8W 1.2K 1    |         |
| R3030       | ERD10LLJ271                                                                                     | CHIP                    | 1/8W 270 1     |         |
| R3033, 3034 | ERD10LLJ271                                                                                     | CHIP                    | 1/8W 270 2     |         |
| R3036       | ERD10LLJ561                                                                                     | CHIP                    | 1/8W 560 1     |         |
| R3037       | ERD10LLJ681                                                                                     | CHIP                    | 1/8W 680 1     |         |
| R3039       | ERD10LLJ102                                                                                     | CHIP                    | 1/8W 1K 1      |         |
| R3041       | ERD10LLJ222                                                                                     | CHIP                    | 1/8W 2.2K 1    |         |
| R3042       | ERDS2TJ102                                                                                      |                         | 1K 1           |         |
| R3043       | ERDS2TJ750                                                                                      |                         | 75 1           |         |
| R3044       | ERD10LLJ102                                                                                     | CHIP                    | 1/8W 1K 1      |         |
| R3045       | ERD10LLJ822                                                                                     | CHIP                    | 1/8W 8.2K 1    |         |
| R3046       | ERD10LLJ102                                                                                     | CHIP                    | 1/8W 1K 1      |         |
| R3049       | ERDS2TJ151                                                                                      |                         | 150 1          |         |
| R3050       | ERD10LLJ331                                                                                     | CHIP                    | 1/8W 330 1     |         |
| R3051       | ERDS2TJ561                                                                                      |                         | 560 1          |         |
| R3054       | ERD10LLJ472                                                                                     | CHIP                    | 1/8W 4.7K 1    |         |
| R3055       | ERDS2TJ221                                                                                      |                         | 220 1          |         |
| R3056       | ERD10LLJ225                                                                                     | CHIP                    | 1/8W 2.2M 1    |         |
| R3057       | ERD10LLJ472                                                                                     | CHIP                    | 1/8W 4.7K 1    |         |
| R3058       | ERD10LLJ102                                                                                     | CHIP                    | 1/8W 1K 1      |         |
| R3059       | ERD10LLJ561                                                                                     | CHIP                    | 1/8W 560 1     |         |
| R3073       | ERDS2TJ100                                                                                      |                         | 10 1           |         |

| Ref No.     | Part No.       | Part Name & Description | Pcs<br>Set | Remarks |
|-------------|----------------|-------------------------|------------|---------|
| R4001       | ERD10LLJ821    | CHIP 1/8W 820           | 1          |         |
| R4002       | ERD10LLJ271    | CHIP 1/8W 270           | 1          |         |
| R4003       | ERDS2TJ223     | 22K                     | 1          |         |
| R4004       | ERD10LLJ392    | CHIP 1/8W 3.9K          | 1          |         |
| R4005       | ERD10LLJ182    | CHIP 1/8W 1.8K          | 1          |         |
| R4006       | ERD10LLJ682    | CHIP 1/8W 6.8K          | 1          |         |
| R4007       | ERD10LLJ223    | CHIP 1/8W 22K           | 1          |         |
| R4008       | ERD10LLJ333    | CHIP 1/8W 33K           | 1          |         |
| R4011       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R4012       | ERD10LLJ334    | CHIP 1/8W 330K          | 1          |         |
| R4013       | ERD10LLJ820    | CHIP 1/8W 82            | 1          |         |
| R4014       | EVND3AA00B54   | VARIABLE 50K            | 1          |         |
| R4015       | ERD10LLJ121    | CHIP 1/8W 120           | 1          |         |
| R4016       | ERD10LLJ333    | CHIP 1/8W 33K           | 1          |         |
| R4017       | ERDS2TJ225     | 2.2M                    | 1          |         |
| R4018       | ERD10LLJ562    | CHIP 1/8W 5.6K          | 1          |         |
| R4021       | ERD10LLJ333    | CHIP 1/8W 33K           | 1          |         |
| R4023, 4024 | ERD10LLJ272    | CHIP 1/8W 2.7K          | 2          |         |
| R4025       | ERDS2TJ394     | 390K                    | 1          |         |
| R4026       | ERD10LLJ393    | CHIP 1/8W 39K           | 1          |         |
| R4034       | ERD10LLJ563    | CHIP 1/8W 56K           | 1          |         |
| R4042       | ERDS2FJ4R7P    | 4.7                     | 1          |         |
|             | OR ERD25FJ4R7P | 4.7                     |            |         |
| R4701       | ERD10LLJ823    | CHIP 1/8W 82K           | 1          |         |
| R4702       | ERD10LLJ101    | CHIP 1/8W 100           | 1          |         |
| R4703-4706  | ERD10LLJ104    | CHIP 1/8W 100K          | 4          |         |
| R4707       | ERDS2TJ562     | 5.6K                    | 1          |         |
| R4708       | ERD10LLJ562    | CHIP 1/8W 5.6K          | 1          |         |
| R4709       | ERD10LLJ823    | CHIP 1/8W 82K           | 1          |         |
| R4710       | ERDS2TJ101     | 100                     | 1          |         |
| R6002       | ERD10LLJ152    | CHIP 1/8W 1.5K          | 1          |         |
| R6003       | ERD10LLJ562    | CHIP 1/8W 5.6K          | 1          |         |
| R6004       | ERDS2TJ821     | 820                     | 1          |         |
| R6005       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6007       | ERD10LLJ104    | CHIP 1/8W 100K          | 1          |         |
| R6008       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6009, 6010 | ERD10LLJ243    | CHIP 1/8W 24K           | 2          |         |
| R6011       | ERG3SJ330H     | METAL OXIDE 3W 33       | 1          |         |
| R6012       | ERD10LLJ391    | CHIP 1/8W 39K           | 1          |         |
| R6013       | ERD10LLJ561    | CHIP 1/8W 56K           | 1          |         |
| R6014-6016  | ERDS2TJ471     | 470                     | 3          |         |
| R6020       | ERD10LLJ472    | CHIP 1/8W 4.7K          | 1          |         |
| R6021       | ERDS2TJ222     | 2.2K                    | 1          |         |
| R6022, 6023 | ERD10LLJ223    | CHIP 1/8W 22K           | 2          |         |
| R6025       | ERDS2TJ564     | 560K                    | 1          |         |
| R6026       | ERD10LLJ122    | CHIP 1/8W 1.2K          | 1          |         |
| R6028       | ERD10LLJ472    | CHIP 1/8W 4.7K          | 1          |         |
| R6029       | ERD10LLJ682    | CHIP 1/8W 6.8K          | 1          |         |
| R6033       | ERD10LLJ225    | CHIP 1/8W 2.2M          | 1          |         |
| R6034       | ERD10LLJ102    | CHIP 1/8W 1K            | 1          |         |
| R6035       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6036       | ERD10LLJ184    | CHIP 1/8W 180K          | 1          |         |
| R6037       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6038, 6039 | ERD10LLJ221    | CHIP 1/8W 22K           | 2          |         |
| R6040       | ERD10LLJ823    | CHIP 1/8W 82K           | 1          |         |
| R6041       | ERD10LLJ274    | CHIP 1/8W 270K          | 1          |         |
| R6042       | ERD10LLJ394    | CHIP 1/8W 390K          | 1          |         |
| R6043       | ERD10LLJ473    | CHIP 1/8W 47K           | 1          |         |
| R6044       | ERD10LLJ184    | CHIP 1/8W 180K          | 1          |         |
| R6045       | ERD10LLJ224    | CHIP 1/8W 220K          | 1          |         |
| R6046       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6048       | ERD10LLJ472    | CHIP 1/8W 4.7K          | 1          |         |
| R6049-6051  | ERD10LLJ221    | CHIP 1/8W 22K           | 3          |         |
| R6052       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6053       | ERD10LLJ221    | CHIP 1/8W 22K           | 1          |         |
| R6054       | ERD10LLJ154    | CHIP 1/8W 150K          | 1          |         |
| R6055       | ERDS2TJ333     | 33K                     | 1          |         |
| R6056       | ERD10LLJ223    | CHIP 1/8W 22K           | 1          |         |
| R6057       | EVUE21M20B15   | VARIABLE 100K           | 1          |         |
| R6059       | ERD10LLJ103    | CHIP 1/8W 10K           | 1          |         |
| R6060       | ERD10LLJ472    | CHIP 1/8W 4.7K          | 1          |         |
| R6061       | EVND3AA00B15   | VARIABLE 100K           | 1          |         |
| R6062       | ERD10LLJ472    | CHIP 1/8W 4.7K          | 1          |         |
| R6063       | ERD10LLJ123    | CHIP 1/8W 12K           | 1          |         |
| R6064-6068  | ERD10LLJ563    | CHIP 1/8W 56K           | 5          |         |
| R6069       | ERD10LLJ102    | CHIP 1/8W 1K            | 1          |         |
| R6071, 6072 | ERD10LLJ102    | CHIP 1/8W 1K            | 2          |         |
| R6073       | ERD10LLJ472    | CHIP 1/8W 4.7K          | 1          |         |

| Ref No.     | Part No.        | Part Name & Description  | Pcs<br>Set | Remarks |
|-------------|-----------------|--------------------------|------------|---------|
| R6075       | ERD10LLJ563     | CHIP 1/8W 56K            | 1          |         |
| R6076-6079  | ERD10LLJ223     | CHIP 1/8W 22K            | 4          |         |
| R6080       | ERD10LLJ102     | CHIP 1/8W 1K             | 1          |         |
| R6082-6086  | ERD10LLJ562     | CHIP 1/8W 5.6K           | 5          |         |
| R6087       | ERD10LLJ103     | CHIP 1/8W 10K            | 1          |         |
| R6088       | ERD10LLJ222     | CHIP 1/8W 2.2K           | 1          |         |
| R6089       | ERD10LLJ103     | CHIP 1/8W 10K            | 1          |         |
| R6090       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6092       | ERDS2TJ332      | 3.3K                     | 1          |         |
| R6093       | ERD10LLJ102     | CHIP 1/8W 1K             | 1          |         |
| R6094       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6095       | ERDS2TJ332      | 3.3K                     | 1          |         |
| R6096       | ERD10LLJ221     | CHIP 1/8W 22K            | 1          |         |
| R6097       | ERD10LLJ103     | CHIP 1/8W 10K            | 1          |         |
| R6099       | ERD10LLJ221     | CHIP 1/8W 22K            | 1          |         |
| R6100       | ERD10LLJ152     | CHIP 1/8W 1.5K           | 1          |         |
| R6101       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6103       | ERD10LLJ221     | CHIP 1/8W 22K            | 1          |         |
| R6104       | ERD10LLJ153     | CHIP 1/8W 15K            | 1          |         |
| R6105       | ERD10LLJ221     | CHIP 1/8W 22K            | 1          |         |
| R6106       | ERD10LLJ332     | CHIP 1/8W 3.3K           | 1          |         |
| R6107       | ERD10LLJ272     | CHIP 1/8W 2.7K           | 1          |         |
| R6109       | ERD10LLJ272     | CHIP 1/8W 2.7K           | 1          |         |
| R6110, 6111 | ERD10LLJ221     | CHIP 1/8W 22K            | 2          |         |
| R6112       | ERD10LLJ562     | CHIP 1/8W 5.6K           | 1          |         |
| R6113       | ERD10LLJ332     | CHIP 1/8W 3.3K           | 1          |         |
| R6115       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6116       | ERD10LLJ562     | CHIP 1/8W 5.6K           | 1          |         |
| R6117       | ERD10LLJ563     | CHIP 1/8W 56K            | 1          |         |
| R6118       | ERD10LLJ562     | CHIP 1/8W 5.6K           | 1          |         |
| R6119       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6120       | ERD10LLJ563     | CHIP 1/8W 56K            | 1          |         |
| R6121       | ERD10LLJ472     | CHIP 1/8W 4.7K           | 1          |         |
| R6122       | ERD10LLJ102     | CHIP 1/8W 1K             | 1          |         |
| R6123       | ERD10LLJ151     | CHIP 1/8W 15K            | 1          |         |
| R6124       | ERD10LLJ271     | CHIP 1/8W 27K            | 1          |         |
| R6125, 6126 | ERD10LLJ393     | CHIP 1/8W 39K            | 2          |         |
| R6127, 6128 | ERD10LLJ222     | CHIP 1/8W 2.2K           | 2          |         |
| R6131, 6132 | ERD10LLJ223     | CHIP 1/8W 22K            | 2          |         |
| R6133       | ERD10LLJ154     | CHIP 1/8W 150K           | 1          |         |
| R6134       | ERD10LLJ562     | CHIP 1/8W 5.6K           | 1          |         |
| R6135       | ERD10LLJ474     | CHIP 1/8W 470K           | 1          |         |
| R6137, 6138 | ERD10LLJ102     | CHIP 1/8W 1K             | 2          |         |
| R6139       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6140       | ERDS2TJ560      | 56                       | 1          |         |
| R6143       | ERD10LLJ223     | CHIP 1/8W 22K            | 1          |         |
| R6144       | ERDS2TJ223      | 22K                      | 1          |         |
| R6145       | ERDS2TJ102      | 1K                       | 1          |         |
| R6148       | ERDS2TJ223      | 22K                      | 1          |         |
| R7002       | EVND3AA00B14    | VARIABLE 10K             | 1          |         |
| R7003       | ERD10LLJ750     | CHIP 1/8W 75             | 1          |         |
| R7005, 7006 | ERDS2TJ103      | 10K                      | 2          |         |
| R7008       | ERDS2TJ681      | 680                      | 1          |         |
| R7009       | ERDS2TJ101      | 100                      | 1          |         |
| R7010       | ERDS1FJ122P     | 1/2W 1.2K                | 1          |         |
|             | OR ERD25FJ122P  | 1.2K                     |            |         |
|             | OR ERD25FPJ122V | 1.2K                     |            |         |
|             | OR ERG1SJ122P   | METAL OXIDE 1W 1.2K      |            |         |
| R7013       | ERDS2TJ471      | 470                      | 1          |         |
| R7017       | ERDS2TJ681      | 680                      | 1          |         |
| R7018       | ERD10LLJ331     | CHIP 1/8W 33K            | 1          |         |
| R7019       | ERD10LLJ392     | CHIP 1/8W 3.9K           | 1          |         |
| R7021       | ERDS2TJ122      | 1.2K                     | 1          |         |
|             |                 |                          |            |         |
|             |                 | CAPACITORS               |            |         |
| C1201       | ECEA1HKR47      | ELECTROLYTIC 50V 0.47    | 1          |         |
| C1203       | ECEA1CK100      | ELECTROLYTIC 16V 10      | 1          |         |
| C3003       | ECEA1EK4R7      | ELECTROLYTIC 25V 4.7     | 1          |         |
| C3004       | VCUSBCH101KB    | C CHIP 50V 100P          | 1          |         |
| C3005       | VCUSBCC103NY    | C CHIP +30% 16V 0.01     | 1          |         |
| C3006       | ECEA0JU221      | ELECTROLYTIC 6.3V 220    | 1          |         |
| C3008       | VCUSBCH390J     | C CHIP +5% 50V 39P       | 1          |         |
| C3010       | ECEA0JK470      | ELECTROLYTIC 6.3V 47     | 1          |         |
| C3011       | VCUSBCC103NY    | C CHIP +30% 16V 0.01     | 1          |         |
| C3012       | ECEA1CK100      | ELECTROLYTIC 16V 10      | 1          |         |
| C3014       | ECEA1CK220      | ELECTROLYTIC 16V 22      | 1          |         |
| C3015       | MCYR1B104ZF     | CERAMIC +80%-20% 12V 0.1 | 1          |         |



| Ref No.     | Part No.     | Part Name & Description  | Pcs<br>Set | Remarks | Ref No.     | Part No.     | Part Name & Description   | Pcs<br>Set | Remarks |
|-------------|--------------|--------------------------|------------|---------|-------------|--------------|---------------------------|------------|---------|
| C3016       | ECEA1EK4R7   | ELECTROLYTIC 25V 4.7     | 1          |         | C6025       | VCYSDR104MX  | CERAMIC +20% 16V 0.1      | 1          |         |
| C3018       | ECEA0JU331   | ELECTROLYTIC 6.3V 330    | 1          |         | C6026       | VCUSBCC103NY | C CHIP +30% 16V 0.01      | 1          |         |
| C3020       | ECEA1EK4R7   | ELECTROLYTIC 25V 4.7     | 1          |         | C6027       | VCUSBCH101KB | C CHIP 50V 100P           | 1          |         |
| C3022       | ECEA0JK220   | ELECTROLYTIC 6.3V 22     | 1          |         | C6029       | VCUSBCH221KB | C CHIP 50V 220P           | 1          |         |
| C3024       | ECEA0JK470   | ELECTROLYTIC 6.3V 47     | 1          |         | C6030, 6031 | ECEA0JK220   | ELECTROLYTIC 6.3V 22      | 2          |         |
| C3026       | ECEA0JK101   | ELECTROLYTIC 6.3V 100    | 1          |         | C6033       | ECEA1HK2R2   | ELECTROLYTIC 50V 2.2      | 1          |         |
| C3028       | VCUSBCH181KB | C CHIP 50V 180P          | 1          |         | C6035       | ECEA0JK220   | ELECTROLYTIC 6.3V 22      | 1          |         |
| C3029       | ECCZ1H680JC  | CERAMIC +5% 50V 68P      | 1          |         | C6036       | ECEA1HK2R2   | ELECTROLYTIC 50V 2.2      | 1          |         |
| C3032, 3033 | VCUSBCH330J  | C CHIP +5% 50V 33P       | 2          |         | C6037       | VCUSBCH561KB | C CHIP 50V 560P           | 1          |         |
| C3034       | VCUSBCH220J  | C CHIP +5% 50V 22P       | 1          |         | C6038       | VCYSDR473KX  | CERAMIC 25V 0.047         | 1          |         |
| C3035       | VCUSBCH470J  | C CHIP +5% 50V 47P       | 1          |         | C6039, 6040 | ECEA0JK220   | ELECTROLYTIC 6.3V 22      | 2          |         |
| C3036       | VCUSBCH270J  | C CHIP +5% 50V 27P       | 1          |         | C6041       | VCYSDR223KX  | CERAMIC 25V 0.022         | 1          |         |
| C3039       | VCUSBCH270J  | C CHIP +5% 50V 27P       | 1          |         | C6042       | VCUSBCC103NY | C CHIP +30% 16V 0.01      | 1          |         |
| C3042       | ECEA1CK220   | ELECTROLYTIC 16V 22      | 1          |         | C6044       | ECEA0JK220   | ELECTROLYTIC 6.3V 22      | 1          |         |
| C3043       | ECRLA050M11  | TRIMMER 50P              | 1          |         | C6045       | VCYSDR104MX  | CERAMIC +20% 16V 0.1      | 1          |         |
| C3044       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | C6046       | VCUSBCC472NX | C CHIP +30% 16V 0.0047    | 1          |         |
| C3045       | VCUSBCH560J  | C CHIP +5% 50V 56P       | 1          |         | C6047       | ECEA0JU471   | ELECTROLYTIC 6.3V 470     | 1          |         |
| C3046       | ECEA0JU471   | ELECTROLYTIC 6.3V 470    | 1          |         | C6048       | VCUSBCH221KB | C CHIP 50V 220P           | 1          |         |
| C3047       | VCUSBCH180J  | C CHIP +5% 50V 18P       | 1          |         | C6049, 6050 | VCUSBCC103NY | C CHIP +30% 16V 0.01      | 2          |         |
| C3048       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | C7003       | ECEA0JU471   | ELECTROLYTIC 6.3V 470     | 1          |         |
| C3050       | ECEA1CK220   | ELECTROLYTIC 16V 22      | 1          |         | C7005       | VCUSBCC103NY | C CHIP +30% 16V 0.01      | 1          |         |
| C3051       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | C7009       | ECKZ1H103ZV  | CERAMIC +80%-20% 50V 0.01 | 1          |         |
| C3052       | ECEA1CK100   | ELECTROLYTIC 16V 10      | 1          |         | C7010       | VCUSBCC103NY | C CHIP +30% 16V 0.01      | 1          |         |
| C3053-3055  | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 3          |         | C7011       | ECEA1CK220   | ELECTROLYTIC 16V 22       | 1          |         |
| C3056       | ECEA1HK010   | ELECTROLYTIC 50V 1       | 1          |         | C7012       | VCUSBCC103NY | C CHIP +30% 16V 0.01      | 1          |         |
| C3057       | VCYSDR104MX  | CERAMIC +20% 16V 0.1     | 1          |         |             |              |                           |            |         |
| C3058       | VCUSBCC472NX | C CHIP +30% 16V 0.0047   | 1          |         |             |              | DELAY LINE                |            |         |
| C3059       | VCYSDR473KX  | CERAMIC 25V 0.047        | 1          |         | DL3001      | VLDS0039     |                           | 1          |         |
| C3060, 3061 | VCYSDR104MX  | CERAMIC +20% 16V 0.1     | 2          |         |             |              |                           |            |         |
| C3062       | VCUSBCH270J  | C CHIP +5% 50V 27P       | 1          |         |             |              |                           |            |         |
| C3063       | VCUSBCH560J  | C CHIP +5% 50V 56P       | 1          |         |             |              | COILS                     |            |         |
| C3064       | ECEA1EK4R7   | ELECTROLYTIC 25V 4.7     | 1          |         | L3002       | VLQEL05R101K |                           | 100        | 1       |
| C3067       | VCYSDR104MX  | CERAMIC +20% 16V 0.1     | 1          |         | L3007, 3008 | VLQEL05R101K |                           | 100        | 2       |
| C3069       | VCUSBCH120°C | C CHIP +5% 50V 12P       | 1          |         | L3010       | VLQEL05R101K |                           | 100        | 1       |
| C3072       | VCUSBCH102KB | C CHIP 50V 0.001         | 1          |         | L3011       | VLQEL05R331K |                           | 330        | 1       |
| C4001       | VCYSDR333KX  | CERAMIC 25V 0.033        | 1          |         | L3012       | VLQEL05R180K |                           | 18         | 1       |
| C4002       | VCYSDR103KX  | CERAMIC 25V 0.01         | 1          |         | L3013       | VLQEL05R100K |                           | 10         | 1       |
| C4003       | ECEA1CK100   | ELECTROLYTIC 16V 10      | 1          |         | L3014       | VLQEL05R390K |                           | 39         | 1       |
| C4004       | ECEA1HK010   | ELECTROLYTIC 50V 1       | 1          |         | L3015       | VLQEL05R120K |                           | 12         | 1       |
| C4005       | VCYSDR272KX  | CERAMIC 25V 0.0027       | 1          |         | L3016       | VLQEL05R680K |                           | 68         | 1       |
| C4006       | VCUSBCH102KB | C CHIP 50V 0.001         | 1          |         | L3017       | VLQEL05R270K |                           | 27         | 1       |
| C4008       | VCYSDR103KX  | CERAMIC 25V 0.01         | 1          |         | L3018       | VLQEL05R220K |                           | 22         | 1       |
| C4009       | ECEA1HK010   | ELECTROLYTIC 50V 1       | 1          |         | L3019-3021  | VLQEL05R101K |                           | 100        | 3       |
| C4010       | ECEA0JK330   | ELECTROLYTIC 6.3V 33     | 1          |         | L3022       | VLQEL05R102K |                           | 1M         | 1       |
| C4011       | ECEA1HK010   | ELECTROLYTIC 50V 1       | 1          |         | L4001       | VLQSG06R153K |                           | 15M        | 1       |
| C4013       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | L4002       | VLQEL05R471K |                           | 470        | 1       |
| C4014       | ECEA1CK220   | ELECTROLYTIC 16V 22      | 1          |         | L7001       | VLQSC01101K  |                           | 100        | 1       |
| C4015       | ECEA0JK220   | ELECTROLYTIC 6.3V 22     | 1          |         |             |              |                           |            |         |
| C4018       | ECHS1392JZ3  | POLYESTER +5% 100V 3900P | 1          |         |             |              | CRYSTAL OSCILLATOR        |            |         |
| C4019, 4020 | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 2          |         | X3001       | VSXS0099     |                           | 1          |         |
| C4021       | ECEA1CK220   | ELECTROLYTIC 16V 22      | 1          |         | X6001       | VSXS0105     |                           | 1          |         |
| C4022       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         |             |              |                           |            |         |
| C4701       | ECEA1HK2R2   | ELECTROLYTIC 50V 2.2     | 1          |         |             |              | PIN HEADERS               |            |         |
| C4703       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | P1201       | VJWS9AB250BE | FLAT CABLE 9P             | 1          |         |
| C4704       | VCUSBCH330J  | C CHIP +5% 50V 33P       | 1          |         | P3004       | VJPS0182     |                           | 12P        | 1       |
| C4705       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | P4001       | VJPS0515     |                           | 4P         | 1       |
| C4706       | VCUSBCH330J  | C CHIP +5% 50V 33P       | 1          |         | P4002       | VJPS0275     |                           | 5P         | 1       |
| C4707       | ECEA1HK2R2   | ELECTROLYTIC 50V 2.2     | 1          |         | P6001       | VJWSEAN130AC | FLAT CABLE 14P            | 1          |         |
| C6001       | ECEA0JK470   | ELECTROLYTIC 6.3V 47     | 1          |         | P6002       | VJSS0470     | CONNECTOR 11P             | 1          |         |
| C6002       | ECEA1EK3R3   | ELECTROLYTIC 25V 3.3     | 1          |         | P6004       | VJSS0333     |                           | 2P         | 1       |
| C6006       | ECEA0JK220   | ELECTROLYTIC 6.3V 22     | 1          |         | P6005       | VJWS4BN220AC | FLAT CABLE 4P             | 1          |         |
| C6007       | ECEA0JK470   | ELECTROLYTIC 6.3V 47     | 1          |         | P6006       | VJSS0469     | CONNECTOR 19P             | 1          |         |
| C6008       | VCYSDR103KX  | CERAMIC 25V 0.01         | 1          |         | P6012       | VJPS0273     |                           | 3P         | 1       |
| C6009       | VCUSBCH102KB | C CHIP 50V 0.001         | 1          |         |             |              |                           |            |         |
| C6010       | ECEA0JK470   | ELECTROLYTIC 6.3V 47     | 1          |         |             |              | FUSE & PROTECTOR          |            |         |
| C6011       | VCYSDR273KX  | CERAMIC 25V 0.027        | 1          |         | PR6001      | ICP-F38      | IC PROTECTOR 1.5A         | 1          |         |
| C6012       | ECEA0JK220   | ELECTROLYTIC 6.3V 22     | 1          |         |             | OR UN10015   | IC PROTECTOR 1.5A         | 1          |         |
| C6013       | VCYSDR103KX  | CERAMIC 25V 0.01         | 1          |         |             |              | TRANSFORMER               |            |         |
| C6014       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         | T4001       | EIQ7QF019Q   |                           | 1          |         |
| C6015, 6016 | VCUSBCH270J  | C CHIP +5% 50V 27P       | 2          |         |             |              |                           |            |         |
| C6017       | VCYSDR332KX  | CERAMIC 25V 0.0033       | 1          |         |             |              |                           |            |         |
| C6018       | VCYSARC103NY | CERAMIC +30% 16V 0.01    | 1          |         |             |              |                           |            |         |
| C6019       | VCYR1C104NX  | CERAMIC +30% 16V 0.1     | 1          |         |             |              |                           |            |         |
| C6020       | VCUSBCC103NY | C CHIP +30% 16V 0.01     | 1          |         |             |              |                           |            |         |
| C6021       | ECEA1HK010   | ELECTROLYTIC 50V 1       | 1          |         |             |              |                           |            |         |
| C6022       | ECQM1H273KF  | POLYESTER 50V 0.027      | 1          |         |             |              |                           |            |         |
| C6023       | ECEA1HK010   | ELECTROLYTIC 50V 1       | 1          |         |             |              |                           |            |         |
| C6024       | VCYSDR472KX  | CERAMIC 25V 0.0047       | 1          |         |             |              |                           |            |         |

(E2, E11, E12, E13, E14, E15, E44, E57, E58)

| Ref No.     | Part No.        | Part Name & Description             | Pcs<br>Set | Remarks | Ref No.     | Part No.     | Part Name & Description   | Pcs<br>Set | Remarks |
|-------------|-----------------|-------------------------------------|------------|---------|-------------|--------------|---------------------------|------------|---------|
|             |                 | PRINTED CIRCUIT BOARD ASSEMBLY      |            |         | R4235       | ERJ6GMYJ473V | MGF CHIP 1/16W 47K        | 1          |         |
| E57         | ▲ VEPS00761A1   | SYNCHRO TERMINAL C.B.A.             | 1          |         | R4236       | EVND3AA00B15 | VARIABLE 100K             | 1          |         |
| E44         | ▲ VEPS0463A1    | HI-FI AUDIO/MTS/SAP C.B.A.          | 1          |         | R4237       | ERJ6GMYJ124V | MGF CHIP 1/16W 120K       | 1          |         |
| E58         | ▲ VEPS0464A1    | FULL ERASE ASS'Y                    | 1          |         | R4238       | ERJ6GMYJ102V | MGF CHIP 1/16W 1K         | 1          |         |
| E2          | ▲ VEQS0439      | UHF/VHF TUNER/TV DEMODULATOR ASS'Y  | 1          |         | R4239       | ERJ6GMYJ272V | MGF CHIP 1/16W 2.7K       | 1          |         |
|             |                 | MISCELLANEOUS                       |            |         | R4240       | ERJ6GMYJ124V | MGF CHIP 1/16W 120K       | 1          |         |
|             |                 |                                     |            |         | R4241       | ERJ6GMYJ154V | MGF CHIP 1/16W 150K       | 1          |         |
|             |                 |                                     |            |         | R4244       | ERJ6GMYJ303V | MGF CHIP 1/16W 30K        | 1          |         |
|             |                 |                                     |            |         | R4245       | ERJ6GMYJ123V | MGF CHIP 1/16W 12K        | 1          |         |
|             |                 |                                     |            |         | R4246       | ERJ6GMYJ103V | MGF CHIP 1/16W 10K        | 1          |         |
|             |                 |                                     |            |         | R4247       | ERJ6GMYJ154V | MGF CHIP 1/16W 150K       | 1          |         |
| E11         | VEQS0420        | ANT TERMINAL/RF CONVERTER UNIT      | 1          |         | R4249       | ERJ6GMYJ473V | MGF CHIP 1/16W 47K        | 1          |         |
| E12         | VJHS0185        | PIN JACK                            | 1          |         | R4250, 4251 | ERJ6GMYJ391V | MGF CHIP 1/16W 390        | 2          |         |
| E13         | VMA51563        | MAIN C.B.A. ANGLE                   | 1          |         | R4252       | ERJ6GMYJ561V | MGF CHIP 1/16W 560        | 1          |         |
| E14         | VSCS1328        | OSD SHIELD CASE -BODY               | 1          |         | R4255       | ERJ6GMYJ562V | MGF CHIP 1/16W 5.6K       | 1          |         |
| E15         | VVCS0003        | CCD SHIELD CASE KIT                 | 1          |         | R4256, 4257 | ERDS2TJ102   | 1K                        | 2          |         |
|             |                 |                                     |            |         | R4258       | ERDS2TJ221   | 220                       | 1          |         |
|             | ▲               | HI-FI AUDIO/MTS/SAP C.B.A.          |            |         | R4259, 4260 | ERJ6GMYJ273V | MGF CHIP 1/16W 27K        | 2          |         |
|             |                 | INTEGRATED CIRCUITS                 |            |         | R4262, 4263 | ERJ6GMYJ101V | MGF CHIP 1/16W 100        | 2          |         |
| IC4201      | VCRS0107        | HIC LINEAR HI-FI AUDIO PROCESS      | 1          |         | R4264       | ERJ6GMYJ562V | MGF CHIP 1/16W 5.6K       | 1          |         |
|             |                 |                                     |            |         | R4265, 4266 | ERJ6GMYJ681V | MGF CHIP 1/16W 680        | 2          |         |
| IC4202      | UPD40538G       | IC MOS LOGIC INPUT SELECT           | 1          | E.S.D.  | R4267, 4268 | ERJ6GMYJ562V | MGF CHIP 1/16W 5.6K       | 2          |         |
| IC4203      | UPC457062-T1    | IC BIPOLAR LINEAR AMP               | 1          |         | R4269, 4270 | ERJ6GMYJ681V | MGF CHIP 1/16W 680        | 2          |         |
| IC4204      | M51132L         | IC BIPOLAR LINEAR OUTPUT VOLUME CTL | 1          |         | R4271       | ERJ6GMYJ562V | MGF CHIP 1/16W 5.6K       | 1          |         |
| IC9001      | UPC1870GH       | IC BIPOLAR LINEAR MTS/SAP DECODER   | 1          |         | R9001       | ERJ6GMYJ391V | MGF CHIP 1/16W 390        | 1          |         |
|             |                 |                                     |            |         | R9002       | ERJ6GMYJ102V | MGF CHIP 1/16W 1K         | 1          |         |
|             |                 |                                     |            |         | R9003       | ERJ6GMYJ273V | MGF CHIP 1/16W 27K        | 1          |         |
|             |                 |                                     |            |         | R9004       | EVND3AA00B54 | VARIABLE 50K              | 1          |         |
|             |                 |                                     |            |         | R9005       | ERJ6GMYJ823V | MGF CHIP 1/16W 82K        | 1          |         |
|             |                 |                                     |            |         | R9007       | ERJ6GMYJ333V | MGF CHIP 1/16W 33K        | 1          |         |
|             |                 |                                     |            |         | R9008       | ERJ6GMYJ125V | MGF CHIP 1/16W 1.2M       | 1          |         |
|             |                 |                                     |            |         | R9009       | ERJ6GMYJ123V | MGF CHIP 1/16W 12K        | 1          |         |
|             |                 |                                     |            |         | R9010       | ERJ6GMYJ182V | MGF CHIP 1/16W 1.8K       | 1          |         |
| Q4201       | 2SD601(Q, R, S) | CHIP                                | 1          |         | R9011       | EVND3AA00B14 | VARIABLE 10K              | 1          |         |
| Q4202       | UN2212          | CHIP                                | 1          |         | R9012       | ERJ6GMYJ823V | MGF CHIP 1/16W 82K        | 1          |         |
| Q4203       | DTC144EK        | CHIP                                | 1          |         | R9013       | ERJ6GMYJ105V | MGF CHIP 1/16W 1M         | 1          |         |
| Q4204, 4205 | UN2212          | CHIP                                | 2          |         | R9014       | EVND3AA00B54 | VARIABLE 50K              | 1          |         |
| Q4206       | 2SB709(Q, R, S) | CHIP                                | 1          |         | R9015-9017  | ERJ6GMYJ103V | MGF CHIP 1/16W 10K        | 3          |         |
| Q4207       | 2SD602(R, S)    | CHIP                                | 1          |         | R9018       | EVND3AA00B15 | VARIABLE 100K             | 1          |         |
| Q4208       | 2SD601(R, S)    | CHIP                                | 1          |         | R9019       | ERJ6GMYJ124V | MGF CHIP 1/16W 120K       | 1          |         |
| Q4209, 4210 | 2SD601(Q, R, S) | CHIP                                | 2          |         | R9020       | EVND3AA00B54 | VARIABLE 50K              | 1          |         |
| Q4213       | DTA144EK        | CHIP                                | 1          |         | R9021       | ERJ6GMYJ473V | MGF CHIP 1/16W 47K        | 1          |         |
| Q4214       | DTC144EK        | CHIP                                | 1          |         |             |              |                           |            |         |
| Q4215       | DTA144EK        | CHIP                                | 1          |         |             |              |                           |            |         |
| Q9001       | 2SD601(Q, R, S) | CHIP                                | 1          |         |             |              | CAPACITORS                |            |         |
|             |                 |                                     |            |         | C4202       | ECEA1CKS100  | ELECTROLYTIC 16V 10       | 1          |         |
|             |                 |                                     |            |         | C4205       | ECEA1CKS100  | ELECTROLYTIC 16V 10       | 1          |         |
|             |                 |                                     |            |         | C4206-4209  | ECEA1CK100   | ELECTROLYTIC 16V 10       | 4          |         |
| D4201       | MA4056-M        | ZENER 5.6V                          | 1          |         | C4210       | ECQB1H222JH  | POLYESTER +-5% 50V 0.0022 | 1          |         |
| D4202-4204  | MA151K          | CHIP                                | 3          |         | C4211       | ECQB1H103JH  | POLYESTER +-5% 50V 0.01   | 1          |         |
| D4205       | MA151WK         | CHIP                                | 1          |         | C4212       | ECEA1CK101   | ELECTROLYTIC 16V 100      | 1          |         |
| D4206       | MA4068-M        | ZENER 6.8V                          | 1          |         | C4213, 4214 | ECUV1H103KBN | C CHIP 50V 0.01           | 2          |         |
| D4207       | MA151WK         | CHIP                                | 1          |         | C4215       | ECEA1EK4R7   | ELECTROLYTIC 25V 4.7      | 1          |         |
| D9001       | MA4068-M        | ZENER 6.8V                          | 1          |         | C4216       | ECEA1CK220   | ELECTROLYTIC 16V 22       | 1          |         |
|             |                 |                                     |            |         | C4217-4221  | ECEA1CK100   | ELECTROLYTIC 16V 10       | 5          |         |
|             |                 |                                     |            |         | C4222       | ECEA1HK0R1   | ELECTROLYTIC 50V 0.1      | 1          |         |
|             |                 |                                     |            |         | C4223       | ECQV1H683JZ  | POLYESTER +-5% 50V 0.068  | 1          |         |
|             |                 |                                     |            |         | C4224       | ECEA1HKS2R2  | ELECTROLYTIC 50V 2.2      | 1          |         |
| R4201       | ERJ6GMYJ104V    | MGF CHIP 1/16W 100K                 | 1          |         | C4225       | ECEA1CK101   | ELECTROLYTIC 16V 100      | 1          |         |
| R4202       | ERJ6GMYJ681V    | MGF CHIP 1/16W 680                  | 1          |         | C4226       | ECEA1HK010   | ELECTROLYTIC 50V 1        | 1          |         |
| R4203       | ERJ6GMYJ471V    | MGF CHIP 1/16W 470                  | 1          |         | C4227       | ECEA1EKS3R3  | ELECTROLYTIC 25V 3.3      | 1          |         |
| R4205       | ERJ6GMYJ562V    | MGF CHIP 1/16W 5.6K                 | 1          |         | C4228       | ECQB1H333KH  | POLYESTER 50V 0.033       | 1          |         |
| R4207       | ERJ6GMYJ471V    | MGF CHIP 1/16W 470                  | 1          |         | C4229       | ECEA1CK100   | ELECTROLYTIC 16V 10       | 1          |         |
| R4209       | ERJ6GMYJ681V    | MGF CHIP 1/16W 680                  | 1          |         | C4231       | ECQB1H103JH  | POLYESTER +-5% 50V 0.01   | 1          |         |
| R4210       | ERJ6GMYJ562V    | MGF CHIP 1/16W 5.6K                 | 1          |         | C4232       | ECQB1H222JH  | POLYESTER +-5% 50V 0.0022 | 1          |         |
| R4211       | ERJ6GMYJ224V    | MGF CHIP 1/16W 220K                 | 1          |         | C4233       | ECEA1CK100   | ELECTROLYTIC 16V 10       | 1          |         |
| R4212       | ERJ6GMYJ103V    | MGF CHIP 1/16W 10K                  | 1          |         | C4234       | ECEA1HK010   | ELECTROLYTIC 50V 1        | 1          |         |
| R4213       | ERJ6GMYJ563V    | MGF CHIP 1/16W 56K                  | 1          |         | C4235       | ECQV1H104JZ  | POLYESTER +-5% 50V 0.1    | 1          |         |
| R4215-4217  | ERJ6GMYJ104V    | MGF CHIP 1/16W 100K                 | 3          |         | C4236       | ECEA1CK470   | ELECTROLYTIC 16V 47       | 1          |         |
| R4218       | • ERJ6GMYOR00V  | MGF CHIP 1/16W 0                    | 1          |         | C4237, 4238 | ECEA0JK470   | ELECTROLYTIC 6.3V 47      | 2          |         |
| R4219       | ERJ6GMYJ104V    | MGF CHIP 1/16W 100K                 | 1          |         | C4239, 4240 | ECEA1CKS100  | ELECTROLYTIC 16V 10       | 2          |         |
| R4221, 4222 | ERJ6GMYJ224V    | MGF CHIP 1/16W 220K                 | 2          |         | C9001       | ECEA1CK101   | ELECTROLYTIC 16V 100      | 1          |         |
| R4223, 4224 | ERJ6GMYJ273V    | MGF CHIP 1/16W 27K                  | 2          |         | C9002       | ECEA1HK010   | ELECTROLYTIC 50V 1        | 1          |         |
| R4225       | ERJ6GMYJ153V    | MGF CHIP 1/16W 15K                  | 1          |         | C9003       | ECUV1H103KBN | C CHIP 50V 0.01           | 1          |         |
| R4226-4228  | • ERJ6GMYOR00V  | MGF CHIP 1/16W 0                    | 3          |         | C9004       | ECEA0JK220   | ELECTROLYTIC 6.3V 22      | 1          |         |
| R4229       | ERDS2TJ221      | 220                                 | 1          |         | C9005       | ECEA1CK100   | ELECTROLYTIC 16V 10       | 1          |         |
| R4230       | • ERJ6GMYOR00V  | MGF CHIP 1/16W 0                    | 1          |         | C9006       | ECEA1HCR22   | ELECTROLYTIC 50V 0.22     | 1          |         |
| R4231-4233  | ERJ6GMYJ103V    | MGF CHIP 1/16W 10K                  | 3          |         | C9007       | ECEA1CK100   | ELECTROLYTIC 16V 10       | 1          |         |
| R4234       | EVND3AA00B54    | VARIABLE 50K                        | 1          |         |             |              |                           |            |         |

• MARK: 0 OHM RESISTOR  
WHEN REPLACING, A 0 OHM RESISTOR CAN BE SUBSTITUTED BY A WIRE.

(E46)

| Ref No.     | Part No.        | Part Name & Description            | Pcs / Set | Remarks | Ref No.   | Part No.        | Part Name & Description | Pcs / Set | Remarks |
|-------------|-----------------|------------------------------------|-----------|---------|-----------|-----------------|-------------------------|-----------|---------|
| C9008       | ECEA1HK2R2      | ELECTROLYTIC 50V 2.2               | 1         |         |           |                 | TRANSISTORS             |           |         |
| C9009       | ECEA1EK4R7      | ELECTROLYTIC 25V 4.7               | 1         |         | Q701      | 2SC4417         | CHIP                    | 1         |         |
| C9010       | ECUV1H102KBN    | C CHIP 50V 0.001                   | 1         |         | Q702      | 2SD601(Q, R, S) | CHIP                    | 1         |         |
| C9011       | ECEA1HK0R1      | ELECTROLYTIC 50V 0.1               | 1         |         |           |                 |                         |           |         |
| C9012       | ECEA1HK2R2      | ELECTROLYTIC 50V 2.2               | 1         |         |           |                 | RESISTORS               |           |         |
| C9013       | ECEA1HKR47      | ELECTROLYTIC 50V 0.47              | 1         |         | R701      | ERJ6GMYJ562V    | MGF CHIP 1/16W 5.6K     | 1         |         |
| C9014-9018  | ECEA1CK100      | ELECTROLYTIC 16V 10                | 5         |         | R703      | ERJ6GMYJ682V    | MGF CHIP 1/16W 6.8K     | 1         |         |
| C9019-9021  | ECEA1HKR47      | ELECTROLYTIC 50V 0.47              | 3         |         | R704      | ERJ6GMYJ821V    | MGF CHIP 1/16W 820      | 1         |         |
| C9022       | ECEA1CK100      | ELECTROLYTIC 16V 10                | 1         |         | R705      | ERJ6GMYJ270V    | MGF CHIP 1/16W 27       | 1         |         |
| C9023, 9024 | ECSF1AE335K     | TANTALUM 10V 3.3                   | 2         |         | R706      | ERJ6GMYJ821V    | MGF CHIP 1/16W 820      | 1         |         |
| C9038       | ECEA1CK100      | ELECTROLYTIC 16V 10                | 1         |         | R707      | ERJ6GMYJ182V    | MGF CHIP 1/16W 1.8K     | 1         |         |
|             |                 |                                    |           |         | R708      | ERJ6GMYJ391V    | MGF CHIP 1/16W 390      | 1         |         |
|             |                 | PIN HEADERS                        |           |         | R709      | ERJ6GMYJ121V    | MGF CHIP 1/16W 120      | 1         |         |
| P4201       | VJHS0136        | PACK PIN                           | 1         |         | R712      | ERJ6GMYJ473V    | MGF CHIP 1/16W 47K      | 1         |         |
| P4202, 4203 | VJHS0167        | PACK PIN 8P                        | 2         |         | R713      | ERJ6GMYJ221V    | MGF CHIP 1/16W 220      | 1         |         |
| P4204       | VJHS0138        | PACK PIN                           | 1         |         | R715      | • ERJ8GCRY0R00V | MGF CHIP 1/8W 0         | 1         |         |
| P4206       | VJPS0189        | 8P                                 | 1         |         | R716      | ERJ6GMYJ102V    | MGF CHIP 1/16W 1K       | 1         |         |
| P4207       | VJPS0255        | 5P                                 | 1         |         | R717      | • ERJ8GCRY0R00V | MGF CHIP 1/8W 0         | 1         |         |
| P9001       | VJPS0285        | 6P                                 | 1         |         | R718      | EVNE4AA00B53    | VARIABLE 5K             | 1         |         |
|             |                 |                                    |           |         | R719      | ERJ6GMYJ122V    | MGF CHIP 1/16W 1.2K     | 1         |         |
|             |                 | TRANSFORMER                        |           |         | R720      | ERJ6GMYJ392V    | MGF CHIP 1/16W 3.9K     | 1         |         |
| T4201       | VLFS0014        |                                    | 1         |         | R721      | ERDS2TJ331      | 330                     | 1         |         |
|             |                 |                                    |           |         | R722      | ERJ6GMYJ272V    | MGF CHIP 1/16W 2.7K     | 1         |         |
|             |                 | MISCELLANEOUS                      |           |         | R723      | ERJ6GMYJ562V    | MGF CHIP 1/16W 5.6K     | 1         |         |
| E46         | VEKS3717        | CONNECTOR ASS'Y                    | 1         |         | R726      | • ERJ6GMYOR00V  | MGF CHIP 1/16W 0        | 1         |         |
|             | ▲               | SYNCHRO TERMINAL C.B.A.            |           |         | R727      | ERJ6GMYJ102V    | MGF CHIP 1/16W 1K       | 1         |         |
|             |                 |                                    |           |         | R728      | ERJ6GMYJ563V    | MGF CHIP 1/16W 56K      | 1         |         |
|             |                 | DIODES                             |           |         | R729      | ERJ6GMYJ472V    | MGF CHIP 1/16W 4.7K     | 1         |         |
| D6014, 6015 | 04AZ5.1ZTPA7    | ZENER 5.1V                         | 2         |         | R730      | ERDS2TJ750      | 75                      | 1         |         |
|             |                 |                                    |           |         | R735      | ERJ8GCRYJ471V   | MGF CHIP 1/8W 470       | 1         |         |
|             | ▲               | FULL ERASE ASS'Y                   |           |         | R736      | ERJ6GMYJ750V    | MGF CHIP 1/16W 75       | 1         |         |
|             |                 | TRANSISTORS                        |           |         | R738      | ERJ6GMYJ123V    | MGF CHIP 1/16W 12K      | 1         |         |
| Q4101       | 2SD636(Q, R, S) |                                    | 1         |         | R739      | EVNE4AA00B53    | VARIABLE 5K             | 1         |         |
| Q4103       | UN1112          |                                    | 1         |         | R740      | ERJ6GMYJ472V    | MGF CHIP 1/16W 4.7K     | 1         |         |
|             |                 |                                    |           |         | R757, 758 | • ERJ6GMYOR00V  | MGF CHIP 1/16W 0        | 2         |         |
|             |                 |                                    |           |         |           |                 | CAPACITORS              |           |         |
|             |                 | DIODES                             |           |         | C701      | VCUSBBC822MY    | C CHIP +20% 16V 0.0082  | 1         |         |
| D4101       | MA165           |                                    | 1         |         | C703      | MCUV1H222MBN    | C CHIP +20% 50V 0.0022  | 1         |         |
|             |                 |                                    |           |         | C704      | VCUSBBC822MY    | C CHIP +20% 16V 0.0082  | 1         |         |
|             |                 | RESISTORS                          |           |         | C705      | ECEA0JK101      | ELECTROLYTIC 6.3V 100   | 1         |         |
| R4101       | ERDS2TJ223      | 22K                                | 1         |         | C706, 707 | VCUSBBC822MY    | C CHIP +20% 16V 0.0082  | 2         |         |
|             |                 |                                    |           |         | C708      | VCESB1C474K     | TANTALUM 16V 0.47       | 1         |         |
|             |                 | CAPACITORS                         |           |         | C709      | VCUSBBC822MY    | C CHIP +20% 16V 0.0082  | 1         |         |
| C4101       | ECQM1H333JV     | POLYESTER +-5% 50V 0.033           | 1         |         | C710      | ECEA1HK010      | ELECTROLYTIC 50V 1      | 1         |         |
| C4102, 4103 | VCYSARC103NY    | CERAMIC +-30% 16V 0.01             | 2         |         | C712      | MCUV1H680JCN    | C CHIP +5% 50V 68P      | 1         |         |
| C4107       | ECEA1CK220      | ELECTROLYTIC 16V 22                | 1         |         | C717      | MCUV1H820JLN    | C CHIP +5% 50V 82P      | 1         |         |
|             |                 |                                    |           |         | C718      | MCUV1H390JCN    | C CHIP +5% 50V 39P      | 1         |         |
|             |                 | COILS                              |           |         | C719      | MCUV1H150JCN    | C CHIP +5% 50V 15P      | 1         |         |
| L4101       | VLQEL05R471K    | 470                                | 1         |         | C721      | MCUV1E103KBM    | C CHIP 25V 0.01         | 1         |         |
|             |                 |                                    |           |         | C722      | ECEA1HKR47      | ELECTROLYTIC 50V 0.47   | 1         |         |
|             |                 | PIN HEADERS                        |           |         | C723      | ECEA1CK100      | ELECTROLYTIC 16V 10     | 1         |         |
| P4101       | VJPS0268        | 2P                                 | 1         |         | C724      | MCUV1H222MBN    | C CHIP +20% 50V 0.0022  | 1         |         |
| P4102       | VJHS0160        | PACK PIN                           | 1         |         | C725      | VCUSBBC822MY    | C CHIP +20% 16V 0.0082  | 1         |         |
| P4103       | VJHS0166        | PACK PIN 3P                        | 1         |         | C730      | ECEA1HKR22      | ELECTROLYTIC 50V 0.22   | 1         |         |
|             |                 |                                    |           |         | C733      | ECEA1CK100      | ELECTROLYTIC 16V 10     | 1         |         |
|             |                 | TRANSFORMER                        |           |         | C738      | ECEA1CK100      | ELECTROLYTIC 16V 10     | 1         |         |
| T4101       | EIQ70F021Q      |                                    | 1         |         | C740      | MCUV1H271JN     | C CHIP +-5% 50V 270P    | 1         |         |
|             | ▲               | UHF/VHF TUNER/TV DEMODULATOR ASS'Y |           |         | C741      | VCUSBBC822MY    | C CHIP +20% 16V 0.0082  | 1         |         |
|             |                 |                                    |           |         |           |                 | FILTERS                 |           |         |
|             |                 | INTEGRATED CIRCUITS                |           |         | FL701     | VLFS0153        |                         | 1         |         |
| IC701       | AN5180NK        | IC BIPOLAR LINEAR TV DEMODU.       | 1         |         | FL702     | EFCS4R5MW5X     |                         | 1         |         |
|             |                 |                                    |           |         | FL703     | EFCH45MSP2      |                         | 1         |         |
|             |                 |                                    |           |         |           |                 | COILS                   |           |         |
|             |                 |                                    |           |         | L705      | ELQTR56KB       | 0.56                    | 1         |         |
|             |                 |                                    |           |         | L706      | VLQSH02R120K    | 12                      | 1         |         |
|             |                 |                                    |           |         | L707      | VLQSH02R101K    | 100                     | 1         |         |
|             |                 |                                    |           |         |           |                 | TRANSFORMER             |           |         |
|             |                 |                                    |           |         | T701      | EIV7EN068B      |                         | 1         |         |
|             |                 |                                    |           |         | T702      | EIV7EN041B      |                         | 1         |         |
|             |                 |                                    |           |         | T704      | EIS7EN018B      |                         | 1         |         |

• MARK: 0 OHM RESISTOR  
WHEN REPLACING, A 0 OHM RESISTOR CAN BE SUBSTITUTED BY A WIRE.

(E17, E18, E19, E20, E47, E48, E49, E50)

| Ref No.     | Part No.          | Part Name & Description        | Pcs / Set | Remarks | Ref No.     | Part No.          | Part Name & Description        | Pcs / Set | Remarks |
|-------------|-------------------|--------------------------------|-----------|---------|-------------|-------------------|--------------------------------|-----------|---------|
|             |                   | POWER SUPPLY ASS'Y             |           |         | C1020       | ▲ ECEA0JFE102X    | ELECTROLYTIC 6.3V 1000         | 1         |         |
|             |                   | INTEGRATED CIRCUITS            |           |         |             | ▲ OR MCEA0JFE102X | ELECTROLYTIC 6.3V 1000         |           |         |
|             |                   |                                |           |         |             | ▲ OR SCEA0JFE102X | ELECTROLYTIC 6.3V 1000         |           |         |
| IC1001      | ▲ ON3161-R        | IC BIPOLAR LINEAR ERROR V. DET | 1         |         | C1021       | VCYSARH102KB      | CERAMIC 50V 0.001              | 1         |         |
| IC1002      | VCRS0094          | HIC ERROR VOLTAGE DET          | 1         |         | C1022       | ECKW1H102KB5      | CERAMIC 50V 0.001              | 1         |         |
|             |                   | TRANSISTORS                    |           |         | C1023       | ECEA0JEE101       | ELECTROLYTIC 6.3V 100          | 1         |         |
| Q1001       | ▲ 2SK796          |                                | 1         |         | C1024       | ECKW1H103ZF5      | CERAMIC +80%-20% 50V 0.01      | 1         |         |
| Q1002       | 2SD1330(T)        |                                | 1         |         | C1025, 1026 | ▲ ECQU1A562MHB    | POLYESTER +20% 10V 0.0056      | 2         |         |
| Q1003       | ▲ 2SB1050(Q, R)   |                                | 1         |         | C1027       | ECKD3A101KB       | CERAMIC 1KV 100P               | 1         |         |
|             |                   | DIODES                         |           |         | C1029       | ECEA1HKG3R3       | ELECTROLYTIC 50V 3.3           | 1         |         |
| D1001       | ▲ S1WBA60S        |                                | 1         |         | C1030       | ECKW2H102KB       | CERAMIC 500V 0.001             | 1         |         |
| D1002       | ERA34-10          |                                | 1         |         | C1031, 1032 | VCKS0030          | CERAMIC 16V 3.3                | 2         |         |
| D1003       | ERB12-01          |                                | 1         |         | C1033       | ECEA0JEE101       | ELECTROLYTIC 6.3V 100          | 1         |         |
| D1004       | MA178             |                                | 1         |         | C1034-1036  | VCKS0030          | CERAMIC 16V 3.3                | 3         |         |
| D1005       | MA858             |                                | 1         |         | C1037       | VCYSARC222MX      | CERAMIC +20% 16V 0.0022        | 1         |         |
| D1006       | MA165             |                                | 1         |         |             |                   | COILS                          |           |         |
| D1007       | ▲ EG01            |                                | 1         |         | L1001       | ▲ ELF18D290A      |                                | 29        | 1       |
| D1008       | ▲ RU4YX           |                                | 1         |         | L1002, 1003 | VLQS9A220M        | +20%                           | 22        | 2       |
| D1009       | ▲ EG01            |                                | 1         |         | L1004       | VLP50011          |                                | 0.1       | 1       |
| D1010       | ▲ ERC81-004       |                                | 1         |         | L1005       | VLP50032          |                                |           | 1       |
| D1011       | ▲ EU2YX           |                                | 1         |         |             |                   | PIN HEADERS                    |           |         |
| D1012       | MA4051N-M         | ZENER 5.1V                     | 1         |         | P1001       | VJSS0467          | CONNECTOR 9P                   |           | 1       |
| D1013, 1014 | ▲ MA2180          | ZENER 18V                      | 2         |         |             |                   | FUSE & PROTECTOR               |           |         |
|             |                   | RESISTORS                      |           |         | F1001       | ▲ XBA2C20NU1      | FUSE 2A 250V                   |           | 1       |
| R1001       | ▲ VRESC2TK275     | +/-10% 1/2W 2.7M               | 1         |         | PR1001      | ▲ ICP-F38         | IC PROTECTOR 1.5A              |           | 1       |
| R1002       | ▲ ERF2AK2R2       | W FLMPRF +/-10% 2W 2.2         | 1         |         |             | ▲ OR UN10015      | IC PROTECTOR 1.5A              |           |         |
| R1003       | ▲ VRESDAFJ334     | METAL OXIDE 330K               | 1         |         |             |                   | TRANSFORMER                    |           |         |
| R1004, 1005 | ▲ VRESB2TJ224     | 1/2W 220K                      | 2         |         | T1001       | ▲ ETS28K304A1     |                                |           | 1       |
| R1006       | ▲ ERG1SJ101E      | METAL OXIDE 1W 100             | 1         |         |             |                   | MISCELLANEOUS                  |           |         |
| R1007       | ERDS2TJ103        | 10K                            | 1         |         | E17         | ▲ VJAS0051        | AC CORD                        |           | 1       |
| R1009       | ▲ ERG1SJ101E      | METAL OXIDE 1W 100             | 1         |         | E18         | VJSS0164          | FUSE HOLDER                    |           | 2       |
| R1010, 1011 | ▲ ERD25FJ100P     | 10                             | 2         |         | E47         | ▲ VMZS0436        | BARRIER                        |           | 1       |
| R1012       | ▲ ERG1SJ180P      | METAL OXIDE 1W 18              | 1         |         | E48         | VSCS1296          | HEAT SINK PLATE                |           | 1       |
| R1013       | ▲ ERG1SJ221E      | METAL OXIDE 1W 220             | 1         |         | E19         | VSCS1355          | POWER SHIELD CASE -TOP         |           | 1       |
| R1014       | ERDS2TJ562        | 5.6K                           | 1         |         | E20         | VSCS1400          | SHIELD CASE -BODY              |           | 1       |
| R1015       | ▲ ERX1SJR56P      | METAL OXIDE 1W 0.56            | 1         |         | E49         | XNG3              | M3 NUT                         |           | 1       |
| R1016       | ERDS2TJ100        | 10                             | 1         |         | E50         | XYN3+F12FNS       | SCREW WITH WASHER 3X12         |           | 1       |
| R1018       | ▲ ERX1SZJR10P     | METAL OXIDE 1W 0.1             | 1         |         |             |                   | TIMER/OPERATION I C.B.A.       |           |         |
|             | ▲ OR ERX1ZSZJR10P | METAL OXIDE 1/2W 0.1           |           |         |             |                   | INTEGRATED CIRCUITS            |           |         |
| R1019       | ERDS2TJ153        | 15K                            | 1         |         | IC7501      | ● D75216AGF568    | IC MOS LOGIC TIMER/DISPLAY CTL | 1         | E.S.D.  |
| R1020       | ERDS2TJ102        | 1K                             | 1         |         | IC7502      | MN1280-L          | IC MOS LOGIC RESET SIGNAL OUT  | 1         | E.S.D.  |
|             |                   | CAPACITORS                     |           |         |             |                   | DIODES                         |           |         |
| C1001, 1002 | ▲ ECKDWS101KBK    | CERAMIC 125V 100P              | 2         |         | D7501       | MA165             |                                | 1         |         |
| C1003       | ▲ ECQU2A683MN     | POLYESTER +/-20% 200V 0.068    | 1         |         | D7506, 7507 | MA165             |                                | 2         |         |
| C1004       | ▲ VCKS0018        | CERAMIC                        | 1         |         | D7511-7516  | MA165             |                                | 6         |         |
| C1005       | ▲ ECES2G0820DG    | ELECTROLYTIC 100V 82           | 1         |         | D7522       | MA4091N-M         | ZENER 9.1V                     | 1         |         |
|             | ▲ OR ECES2G0820DU | ELECTROLYTIC 400V 82           |           |         | D7526       | MA165             |                                | 1         |         |
| C1006       | ECQE4474KF        | POLYESTER 400V 0.47            | 1         |         | D7801, 7802 | LN21RCPHLMV       | LED RED                        | 2         |         |
| C1007       | ECKD3A221KB       | CERAMIC 2KV 220P               | 1         |         | D7822       | MA165             |                                | 1         |         |
| C1008       | ECQB1H183JZ       | POLYESTER +/-5% 50V 0.018      | 1         |         | D7824       | MA165             |                                | 1         |         |
| C1009       | ECQB1H332JZ       | POLYESTER +/-5% 50V 0.0033     | 1         |         |             |                   | RESISTORS                      |           |         |
| C1011       | VCKS0030          | CERAMIC 16V 3.3                | 1         |         | R7501-7507  | ERDS2TJ223        | 22K                            | 7         |         |
| C1013       | ECKW2H102KB       | CERAMIC 500V 0.001             | 1         |         | R7508-7514  | ERDS2TJ102        | 1K                             | 7         |         |
| C1015       | ▲ ECEA1PEE102     | ELECTROLYTIC 18V 1000          | 1         |         | R7518, 7519 | ERDS2TJ223        | 22K                            | 2         |         |
|             | ▲ OR SCEA1PEE102  | ELECTROLYTIC 18V 1000          |           |         | R7520-7522  | ERDS2TJ101        | 100                            | 3         |         |
| C1016       | ▲ ECEA1HGE100B    | ELECTROLYTIC 50V 10            | 1         |         | R7523       | ERDS2TJ102        | 1K                             | 1         |         |
|             | ▲ OR MCEA1HGE100B | ELECTROLYTIC 50V 10            |           |         | R7524       | ERDS2TJ103        | 10K                            | 1         |         |
|             | ▲ OR NCEA1HGE100B | ELECTROLYTIC 50V 1             |           |         | R7525       | ERDS2TJ102        | 1K                             | 1         |         |
|             | ▲ OR SCEA1HGE100B | ELECTROLYTIC 50V 10            |           |         | R7527       | ERDS2TJ102        | 1K                             | 1         |         |
| C1017       | ▲ ECEA1PEE331     | ELECTROLYTIC 18V 330           | 1         |         |             |                   |                                |           |         |
|             | ▲ OR NCEA1PFE331  | ELECTROLYTIC 18V 330           |           |         |             |                   |                                |           |         |
|             | ▲ OR SCEA1PFE331L | ELECTROLYTIC 18V 330           |           |         |             |                   |                                |           |         |
| C1018       | ▲ ECEA1HGE100B    | ELECTROLYTIC 50V 10            | 1         |         |             |                   |                                |           |         |
|             | ▲ OR MCEA1HGE100B | ELECTROLYTIC 50V 10            |           |         |             |                   |                                |           |         |
|             | ▲ OR NCEA1HGE100B | ELECTROLYTIC 50V 1             |           |         |             |                   |                                |           |         |
|             | ▲ OR SCEA1HGE100B | ELECTROLYTIC 50V 10            |           |         |             |                   |                                |           |         |
| C1019       | ▲ ECEA1PEE102     | ELECTROLYTIC 18V 1000          | 1         |         |             |                   |                                |           |         |

• MARK : THE MANUFACTURING PART NUMBER IS UPD75216AGF568 HOWEVER TO ORDER PART USE SERVICE ORDER PART NUMBER D75216AGF568.

(E21, E23, E24, E51)

| Ref No.      | Part No.     | Part Name & Description   | Pcs / Set | Remarks |
|--------------|--------------|---------------------------|-----------|---------|
| R7530        | ERDS2TJ103   |                           | 10K 1     |         |
| R7531-7536   | ERDS2TJ102   |                           | 1K 6      |         |
| R7537        | ERDS2TJ683   |                           | 68K 1     |         |
| R7538        | ERDS2TJ102   |                           | 1K 1      |         |
| R7540        | ERDS2TJ103   |                           | 10K 1     |         |
| R7541        | ERDS2TJ223   |                           | 22K 1     |         |
| R7803, 7804  | ERDS2TJ102   |                           | 1K 2      |         |
| R7821        | ERDS2TJ331   |                           | 330 1     |         |
| R7851        | ERDS2TJ122   |                           | 1.2K 1    |         |
| R7852, 7853  | ERDS2TJ333   |                           | 33K 2     |         |
| R7854        | ERDS2TJ122   |                           | 1.2K 1    |         |
| R7855, 7856  | ERDS2TJ123   |                           | 12K 2     |         |
| R7857        | ERG1SJ330P   | METAL OXIDE 1W            | 33 1      |         |
|              |              |                           |           |         |
|              |              | CAPACITORS                |           |         |
| C7501, 7502  | VCYSARH120JC | CERAMIC +5% 50V 12P       | 2         |         |
| C7510, 7511  | VCYSARH101KB | CERAMIC 50V 100P          | 2         |         |
| C7512        | VCYSARH102KB | CERAMIC 50V 0.001         | 1         |         |
| C7513        | VCYSARC103NY | CERAMIC +30% 16V 0.01     | 1         |         |
| C7514        | ECEA0JKS101  | ELECTROLYTIC 6.3V 100     | 1         |         |
| C7515        | VCYSARC103NY | CERAMIC +30% 16V 0.01     | 1         |         |
| C7516        | ECEA1EKS4R7  | ELECTROLYTIC 25V 4.7      | 1         |         |
| C7517        | ECKZ1H103ZV  | CERAMIC +80%-20% 50V 0.01 | 1         |         |
| C7851, 7852  | ECEA1HKS010  | ELECTROLYTIC 50V          | 1 2       |         |
| C7853        | ECEA1CK100   | ELECTROLYTIC 16V 10       | 1         |         |
|              |              |                           |           |         |
|              |              | CRYSTAL OSCILLATOR        |           |         |
| X7501        | VXS0044      |                           | 1         |         |
|              |              |                           |           |         |
|              |              | PIN HEADERS               |           |         |
| P7501        | VJWSJAN460AE | FLAT CABLE 19P            | 1         |         |
| P7502        | VJPS0373     |                           | 14P 1     |         |
| P7504        | VJPS0172     |                           | 2P 1      |         |
|              |              |                           |           |         |
|              |              | SWITCHES                  |           |         |
| SW7502       | EVQQR05K     | PUSH SWITCH               | 1         |         |
| SW7504, 7505 | EVQQR05K     | PUSH SWITCH               | 2         |         |
| SW7507-7510  | EVQQR05K     | PUSH SWITCH               | 4         |         |
|              |              |                           |           |         |
|              |              | MISCELLANEOUS             |           |         |
|              |              |                           |           |         |
| DP7501(E21)  | VSZS0082A    | DISPLAY TUBE              | 1         |         |
| DP7851       | LN141181UN   | LED LEVEL METER           | 1         |         |
| E23          | VGMS0156     | DISPLAY TUBE HOLDER -L    | 1         |         |
| E24          | VGMS0157     | DISPLAY TUBE HOLDER -R    | 1         |         |
| E51          | VMXS0583     | LED SPACER                | 2         |         |
|              |              |                           |           |         |
|              |              | TIMER/OPERATION II C.B.A. |           |         |
|              |              |                           |           |         |
|              |              | DIODES                    |           |         |
| D7517, 7518  | MA165        |                           | 2         |         |
| D7821        | MA165        |                           | 1         |         |
| D7823        | MA165        |                           | 1         |         |
| D7831        | MA165        |                           | 1         |         |
|              |              |                           |           |         |
|              |              | RESISTORS                 |           |         |
| R7801, 7802  | ERDS2TJ102   |                           | 1K 2      |         |
| R7805        | ERDS2TJ103   |                           | 10K 1     |         |
| R7841        | EVUFLAED2B54 | VARIABLE                  | 50K 1     |         |
| R7842        | EVUFLAEC9B54 | VARIABLE                  | 50K 1     |         |
| R7844        | ERDS2TJ683   |                           | 68K 1     |         |
| R7858        | ERDS2TJ100   |                           | 10 1      |         |
|              |              |                           |           |         |
|              |              | PIN HEADERS               |           |         |
| P7503        | VJSS0331     |                           | 14P 1     |         |
| P7507        | VJPS0176     |                           | 6P 1      |         |
|              |              |                           |           |         |
|              |              | SWITCHES                  |           |         |
| SW7501       | VSSS0100     | SLIDE SWITCH              | 1         |         |

(E22, E28, E45, E54, E55, E56, E62)

| Ref No.     | Part No.     | Part Name & Description             | Pcs / Set   | Remarks |
|-------------|--------------|-------------------------------------|-------------|---------|
| SW7503      | EVQQR05K     | PUSH SWITCH                         | 1           |         |
| SW7511-7513 | EVQQR05K     | PUSH SWITCH                         | 3           |         |
| SW7801      | VSSS0058     | SELECT SWITCH                       | 1           |         |
| SW7802      | VSSS0094     | SLIDE SWITCH                        | 1           |         |
| SW7821      | VSSS0109     | SLIDE SWITCH                        | 1           |         |
| SW7841      | VSSS0094     | SLIDE SWITCH                        | 1           |         |
|             |              |                                     |             |         |
|             |              | MISCELLANEOUS                       |             |         |
|             |              |                                     |             |         |
| E62         | VEKS3828     | GROUNDING ANGLE                     | 1           |         |
| E22         | VEQS0357     | IR WIRELESS RECEIVING DETECTOR UNIT | 1           |         |
| E54         | VGKS0985     | SWITCH COVER                        | 3           |         |
| E55         | VGKS1521     | SWITCH COVER                        | 1           |         |
| E56         | VJJS0117     | JACK                                | 1           |         |
| E45         | VMTS0035     | CUSHION                             | 2           |         |
|             |              |                                     |             |         |
|             |              | CAPSTAN/CYLINDER MOTOR DRIVE C.B.A. |             |         |
|             |              |                                     |             |         |
|             |              | INTEGRATED CIRCUITS                 |             |         |
| IC2601      | AN3813K      | IC BIPOLAR LINEAR CYL. DRIVE        | 1           |         |
| IC2602      | PUA3228      | IC BIPOLAR LINEAR POWER DRIVE       | 1           |         |
| IC2603      | AN3826NK     | IC BIPOLAR LINEAR CAP. DRIVE        | 1           |         |
|             |              |                                     |             |         |
|             |              | RESISTORS                           |             |         |
| R2601       | ERDS2TJ561   |                                     | 560 1       |         |
| R2604       | ERDS1TAJR56  |                                     | 1/2W 0.56 1 |         |
| R2605       | ERDS2TJ270   |                                     | 27 1        |         |
| R2606       | ERDS2TJ330   |                                     | 33 1        |         |
| R2607       | ERDS2TJ222   |                                     | 2.2K 1      |         |
| R2608       | ERDS1TAJR68  |                                     | 1/2W 0.68 1 |         |
| R2609-2611  | ERDS2TJ330   |                                     | 33 3        |         |
|             |              |                                     |             |         |
|             |              | CAPACITORS                          |             |         |
| C2601-2603  | ECEA1EK4R7   | ELECTROLYTIC 25V 4.7                | 3           |         |
| C2604-2608  | VCYSDR104MX  | CERAMIC +20% 16V 0.1                | 5           |         |
| C2609       | VCYSDR473KX  | CERAMIC 25V 0.047                   | 1           |         |
| C2610       | ECKZ1H103ZV  | CERAMIC +80%-20% 50V 0.01           | 1           |         |
| C2611-2613  | ECEA1CK100   | ELECTROLYTIC 16V 10                 | 3           |         |
| C2614, 2615 | ECKZ1H103ZV  | CERAMIC +80%-20% 50V 0.01           | 2           |         |
| C2616       | VCYSARC103NY | CERAMIC +30% 16V 0.01               | 1           |         |
| C2617       | VCYSDR104MX  | CERAMIC +20% 16V 0.1                | 1           |         |
| C2618       | ECKZ1H152KB  | CERAMIC 50V 0.0015                  | 1           |         |
| C2619       | VCYSDR1563KX | CERAMIC 16V 0.056                   | 1           |         |
| C2620       | ECEA1HK010   | ELECTROLYTIC 50V                    | 1 1         |         |
| C2622       | ECEA1CK100   | ELECTROLYTIC 16V 10                 | 1           |         |
| C2623       | ECEA0JK220   | ELECTROLYTIC 6.3V 22                | 1           |         |
|             |              |                                     |             |         |
|             |              | PIN HEADERS                         |             |         |
| P2601       | VJPS0507     |                                     | 8P 1        |         |
| P2602       | VJPS0509     |                                     | 13P 1       |         |
| P2603       | VJWSBAN130BD | FLAT CABLE 11P                      | 1           |         |
|             |              |                                     |             |         |
|             |              | MISCELLANEOUS                       |             |         |
|             |              |                                     |             |         |
| E28         | VMS0558      | DRIVE C.B.A. HOLDER                 | 1           |         |
|             |              |                                     |             |         |
|             |              | US/PX SELECT SWITCH C.B.A.          |             |         |
|             |              |                                     |             |         |
|             |              | DIODES                              |             |         |
| D7005       | 04AZ5.1ZTPA7 | ZENER 5.1V                          | 1           |         |
|             |              |                                     |             |         |
|             |              | SWITCHES                            |             |         |
| SW7001      | ESD14304     | SELECT SWITCH                       | 1           |         |
|             |              |                                     |             |         |
|             |              | SUPPLY PHOTO TR ASS'Y               |             |         |
|             |              |                                     |             |         |
|             |              | TRANSISTORS                         |             |         |
| Q1551       | PN150NV      |                                     | 1           |         |

(E29, E30, E31, E32, E33, E34, E35, E36)

| Ref No.     | Part No.     | Part Name & Description                | Pcs<br>Set | Remarks |
|-------------|--------------|----------------------------------------|------------|---------|
|             |              |                                        |            |         |
|             |              | CAPACITORS                             |            |         |
| C1551       | ECKZ1H222ZF  | CERAMIC +80%-20% 50V 0.0022            | 1          |         |
|             |              |                                        |            |         |
|             |              | MISCELLANEOUS                          |            |         |
| E29         | VJBS00553    | SUPPLY PHOTO TR P.C.B.                 | 1          |         |
|             |              |                                        |            |         |
|             |              | TAKEUP PHOTO TR ASS'Y                  |            |         |
|             |              |                                        |            |         |
|             |              | TRANSISTORS                            |            |         |
| Q1552       | PN150NV      |                                        | 1          |         |
|             |              |                                        |            |         |
|             |              | RESISTORS                              |            |         |
| R1551       | ERDS2TJ332   | 3.3K                                   | 1          |         |
|             |              |                                        |            |         |
|             |              | CAPACITORS                             |            |         |
| C1552       | ECKZ1H222ZF  | CERAMIC +80%-20% 50V 0.0022            | 1          |         |
|             |              |                                        |            |         |
|             |              | MISCELLANEOUS                          |            |         |
| E30         | VJBS00650    | TAKEUP PHOTO TR P.C.B.                 | 1          |         |
| E31         | VMDS0391     | PHOTO TR HOLDER                        | 1          |         |
|             |              |                                        |            |         |
|             |              | MECHANISM CONNECTION ASS'Y             |            |         |
|             |              |                                        |            |         |
|             |              | INTEGRATED CIRCUITS                    |            |         |
| IC1551      | ON2170-RS    | IC BIPOLAR LINEAR PHOTO<br>COUPL.      | 1          |         |
|             |              |                                        |            |         |
|             |              | PIN HEADERS                            |            |         |
| P1553       | VJSS0471     | CONNECTOR                              | 1          |         |
|             |              |                                        |            |         |
|             |              | ( IR WIRELESS TRANSMITTER C.B.A. )     |            |         |
|             |              |                                        |            |         |
|             |              | INTEGRATED CIRCUITS                    |            |         |
| IC6801      | MN6016AK     | IC MOS LOGIC IR TRANSMITTER            | 1          | E.S.D.  |
|             |              |                                        |            |         |
|             |              | TRANSISTORS                            |            |         |
| Q6801       | 2SD1458      |                                        | 1          |         |
|             |              |                                        |            |         |
|             |              | DIODES                                 |            |         |
| D6801       | SE303ACK     | LED                                    | 1          |         |
|             |              |                                        |            |         |
|             |              | RESISTORS                              |            |         |
| R6801       | ERDS2TJ1R0   |                                        | 1          | 1       |
| R6802       | ERDS2TJ102   |                                        | 1K         | 1       |
|             |              |                                        |            |         |
|             |              | CAPACITORS                             |            |         |
| C6801, 6802 | VCYSARH101KB | CERAMIC 50V 100P                       | 2          |         |
| C6803       | ECEA0JK470   | ELECTROLYTIC 6.3V 47                   | 1          |         |
|             |              |                                        |            |         |
|             |              | CRYSTAL OSCILLATOR                     |            |         |
| X6801       | CSB455EB1    |                                        | 1          |         |
|             |              |                                        |            |         |
|             |              | ELECTRICAL PARTS<br>LOCATED ON CHASSIS |            |         |
|             |              |                                        |            |         |
| SW1551(E32) | VSSS0095     | SLIDE SWITCH                           | 1          |         |
| SW1552(E33) | VSSS0081     | MODE SELECT SWITCH                     | 1          |         |
| SW1554(E34) | VXMS0037     | SAFETY TAB SWITCH                      | 1          |         |
| E36         | VEKS3694     | CONNECTOR ASS'Y                        | 1          |         |
| E35         | VEKS3707     | CONNECTOR ASS'Y                        | 1          |         |

(E37, E38, E42, E80)

[illegible]

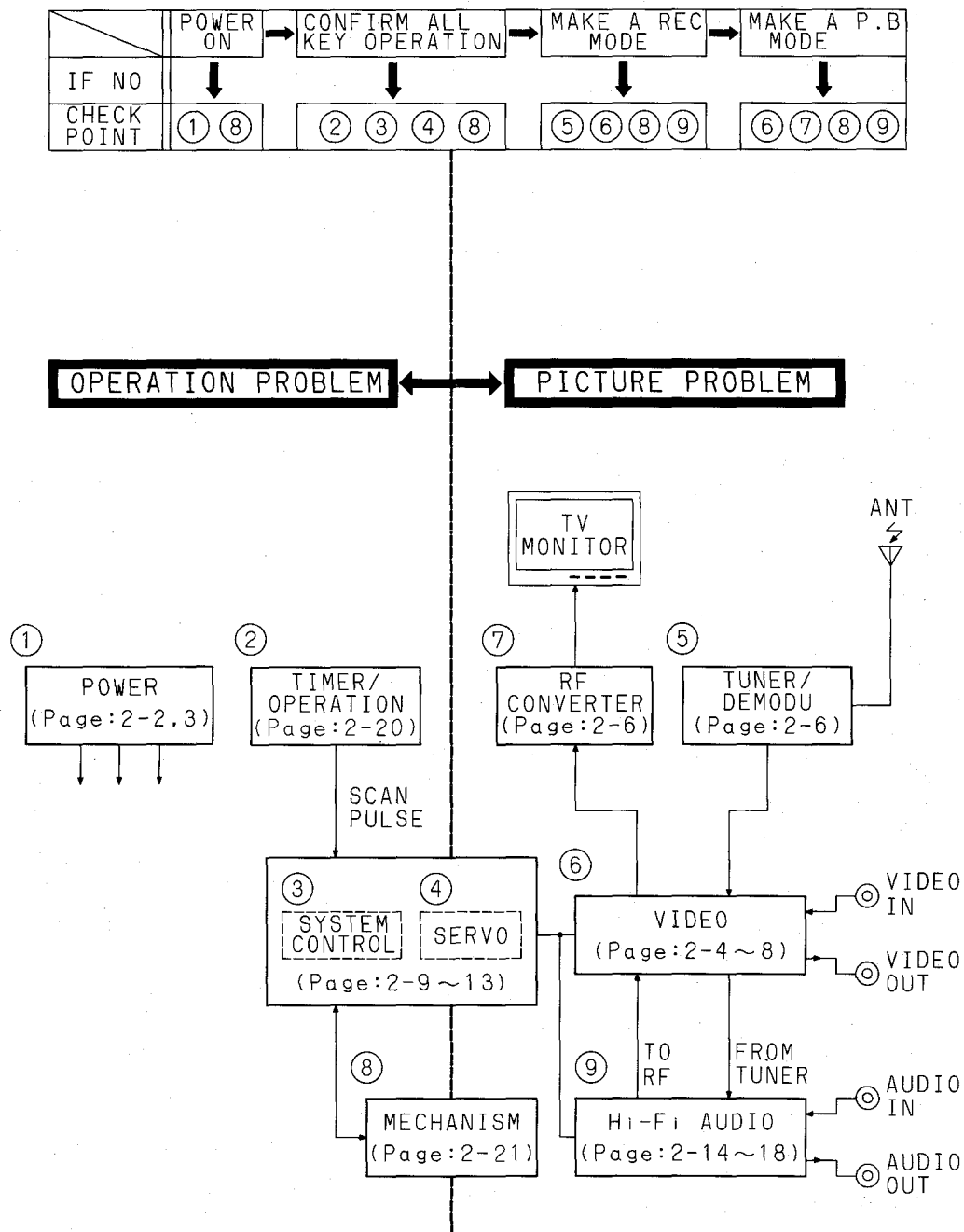
**SECTION 2****Block Diagrams**

| MODEL NO. | AUDIO | AUTO TR. | FE HEAD |
|-----------|-------|----------|---------|
| NV-F65PX  | Hi-Fi | ○        | ○       |

## CONTENTS

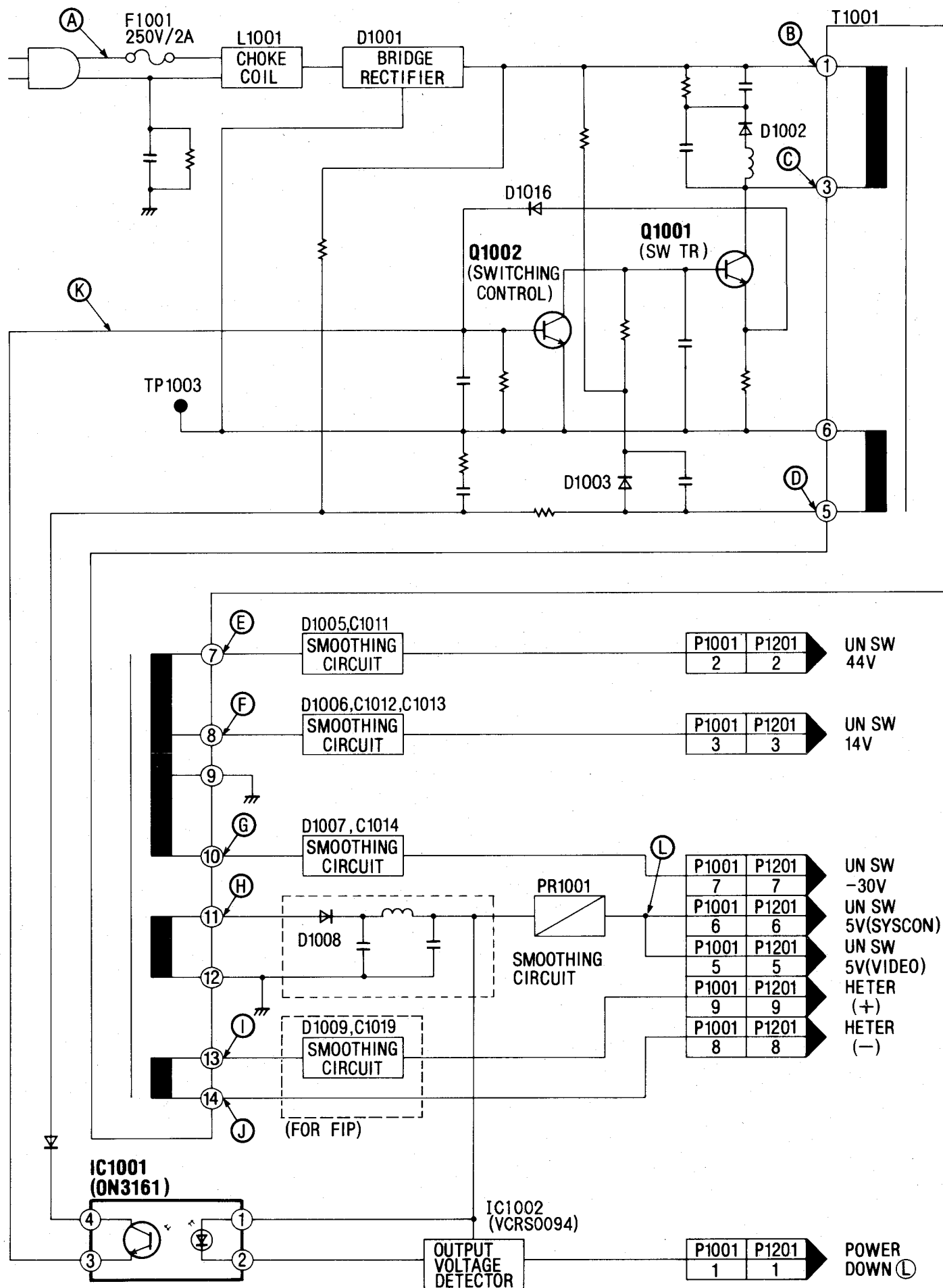
### (OVERALL BLOCK DIAGRAM)

\*First, confirm whether causes of troubles belong to Operation Problem or Picture Problem by using following chart, and then refer to the related sections on the following pages for troubleshooting.





## POWER BLOCK DIAGRAM



# WAVEFORM OF POWER STAGE

| NO | WAVEFORM | GND TP      | NO | WAVEFORM | GND TP      | NO | WAVEFORM | GND TP      |
|----|----------|-------------|----|----------|-------------|----|----------|-------------|
| Ⓐ  |          |             | Ⓑ  |          | TP1003      | Ⓒ  |          | TP1003      |
| Ⓓ  |          | TP1003      | Ⓔ  |          | CHASSIS GND | Ⓕ  |          | CHASSIS GND |
| Ⓔ  |          | CHASSIS GND | Ⓖ  |          | CHASSIS GND | Ⓖ  |          | CHASSIS GND |
| Ⓙ  |          | CHASSIS GND | Ⓚ  |          | TP1003      |    |          |             |

NOTE : WAVEFORMS MEASURED IN STOP MODE

## POWER CHECKING PROCEDURE

| SYMPTOM                            |                | FLOW OF TROUBLESHOOT → |         |   |   |   |         |  |  |  |  |
|------------------------------------|----------------|------------------------|---------|---|---|---|---------|--|--|--|--|
| No Power<br>(Secondary<br>Circuit) | CHECK<br>POINT | Ⓐ                      | Ⓑ       | Ⓒ | Ⓓ | Ⓔ | ※NOTE 2 |  |  |  |  |
|                                    | IF NO          | ↓                      | ↓       |   |   |   |         |  |  |  |  |
|                                    | CHANGE         | PR1001                 | ※NOTE 1 |   |   |   |         |  |  |  |  |

※NOTE 1: If voltage is not correct, check primary circuit.

※NOTE 2: If all voltage is correct, check System Control circuit or Adjust Gear Phase.

| SYMPTOM                          |                | FLOW OF TROUBLESHOOT → |                                 |   |   |   |  |  |  |  |  |
|----------------------------------|----------------|------------------------|---------------------------------|---|---|---|--|--|--|--|--|
| No Power<br>(Primary<br>Circuit) | CHECK<br>POINT | Ⓐ                      | Ⓑ                               | Ⓒ | Ⓓ | Ⓔ |  |  |  |  |  |
|                                  | IF NO          | ↓                      | ↓                               |   |   |   |  |  |  |  |  |
|                                  | CHANGE         | ※NOTE 1                | F1001<br>Q1001 ※NOTE 2<br>Q1002 |   |   |   |  |  |  |  |  |

※NOTE 1: Check AC Outlet.

※NOTE 2: Change Q1001, Q1002 and F1001 at the same time.

| SYMPTOM |                | FLOW OF TROUBLESHOOT → |  |  |  |  |  |  |  |  |  |
|---------|----------------|------------------------|--|--|--|--|--|--|--|--|--|
|         | CHECK<br>POINT |                        |  |  |  |  |  |  |  |  |  |
|         | IF NO          |                        |  |  |  |  |  |  |  |  |  |
|         | CHANGE         |                        |  |  |  |  |  |  |  |  |  |

# WAVEFORM OF VIDEO STAGE

\*NOTE:1.The measurement mode of the waveforms in brackets on this chart is Record and Playback modes with NTSC color bar signal.  
2.Please use blank brackets to note additional information.

| NO  | WAVEFORM | NOTE                                   | NO  | WAVEFORM | NOTE                                   | NO  | WAVEFORM | NOTE                                   |
|-----|----------|----------------------------------------|-----|----------|----------------------------------------|-----|----------|----------------------------------------|
| (A) |          | REC/P.B                                | (B) |          | LINE (H)<br>TUNER (L)                  | (C) |          | LINE (L)<br>TUNER (H)                  |
| (D) |          | REC/P.B                                | (E) |          | REC "A" = 2.0Vp-p<br>P.B "A" = 2.2Vp-p | (F) |          | REC/P.B                                |
| (G) |          | REC                                    | (H) |          | REC                                    | (I) |          |                                        |
| (J) |          | REC (SP/LP SLP)                        | (L) |          |                                        | (P) |          | P.B                                    |
| (K) |          |                                        | (N) |          |                                        | (Q) |          | P.B                                    |
| (R) |          |                                        | (M) |          |                                        |     |          |                                        |
|     |          |                                        | (O) |          |                                        |     |          |                                        |
|     |          |                                        | (S) |          |                                        |     |          |                                        |
|     |          |                                        |     |          |                                        |     |          |                                        |
|     |          |                                        |     |          |                                        |     |          |                                        |
| (a) |          | REC "A" = 0.8Vp-p<br>P.B "A" = 1.0Vp-p | (b) |          | REC/P.B                                | (c) |          |                                        |
| (d) |          | REC/P.B                                | (e) |          | REC/P.B                                | (f) |          | REC "A" = 0.4Vp-p<br>P.B "A" = 0.8Vp-p |
| (g) |          | REC "A" = 0.1Vp-p<br>P.B "A" = 0.2Vp-p | (h) |          | P.B                                    | (i) |          |                                        |
| (j) |          | REC/P.B                                | (k) |          | REC/P.B                                | (l) |          | REC/P.B                                |
| (m) |          | CUE/REV /SLOW /STILL                   | (n) |          |                                        |     |          |                                        |
|     |          |                                        |     |          |                                        |     |          |                                        |
|     |          |                                        |     |          |                                        |     |          |                                        |
|     |          |                                        |     |          |                                        |     |          |                                        |

VIDEO CHECKING PROCEDURE

| FLOW OF TROUBLESHOOT → |        |                  |                  |        |        |  |
|------------------------|--------|------------------|------------------|--------|--------|--|
| CHECK POINT            | (A)    | (D)              | (E)              | (F)    | TV     |  |
| IF NO                  | ↓      | ↓                | ↓                | ↓      | ↓      |  |
| CHANGE                 | *NOTE1 | IC3002<br>*NOTE2 | IC3001<br>*NOTE3 | IC3003 | *NOTE4 |  |

\*NOTE1: Check Tuner/Demodu or Video In Terminal.  
\*NOTE2: Check signals (B) and (C) (LINE/(H), TUNER/(D)).  
\*NOTE3: Check signals E-E (H) (Pin 11) or REC (L) (P.B (H)) (Pin 21).  
\*NOTE4: Check RF Converter or Video Out Terminal.

| FLOW OF TROUBLESHOOT → |        |                  |                  |          |                             |     |      |
|------------------------|--------|------------------|------------------|----------|-----------------------------|-----|------|
| CHECK POINT            | (D)    | (G)              | (H)              | (I)      | (J)                         | (K) | HEAD |
| IF NO                  | ↓      | ↓                | ↓                | ↓        | ↓                           | ↓   | ↓    |
| CHANGE                 | *NOTE1 | IC3001<br>*NOTE2 | IC6001<br>*NOTE3 | HEAD AMP | UPPER<br>CYLINDER<br>*NOTE4 |     |      |

\*NOTE1: Check Tuner/Demodu or Video In Terminal, and IC3002.  
\*NOTE2: Check signals (A), (B), (C), (D), E-E (H) (Pin 11) or REC (L) (P.B (H)) (Pin 21).  
\*NOTE3: Check Cylinder FG/PG signal at Pin 47 of IC6001.  
\*NOTE4: Try head cleaning.

| FLOW OF TROUBLESHOOT → |          |     |        |     |     |  |  |
|------------------------|----------|-----|--------|-----|-----|--|--|
| CHECK POINT            | (Q)      | (K) | (f)    | (g) | (h) |  |  |
| IF NO                  | ↓        | ↓   | ↓      | ↓   | ↓   |  |  |
| CHANGE                 | HEAD AMP |     | IC3001 |     |     |  |  |

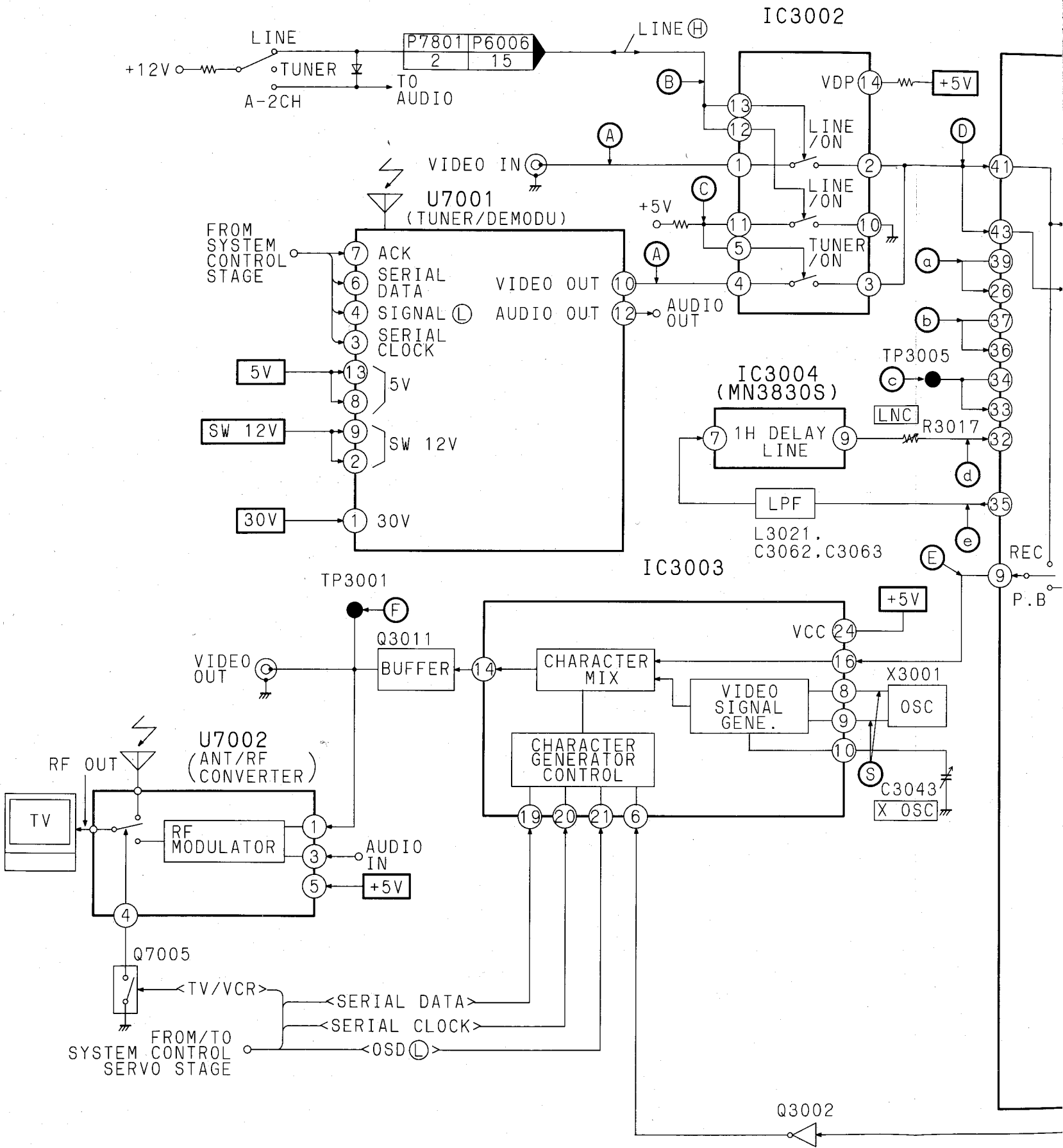
| FLOW OF TROUBLESHOOT → |                          |     |     |     |        |                         |  |
|------------------------|--------------------------|-----|-----|-----|--------|-------------------------|--|
| CHECK POINT            | (L)                      | (M) | (N) | (O) | (I)    | (R)                     |  |
| IF NO                  | ↓                        | ↓   | ↓   | ↓   | ↓      | ↓                       |  |
| CHANGE                 | UPPER CYLINDER<br>*NOTE1 |     |     |     | *NOTE2 | SEE<br>SERVO<br>SECTION |  |

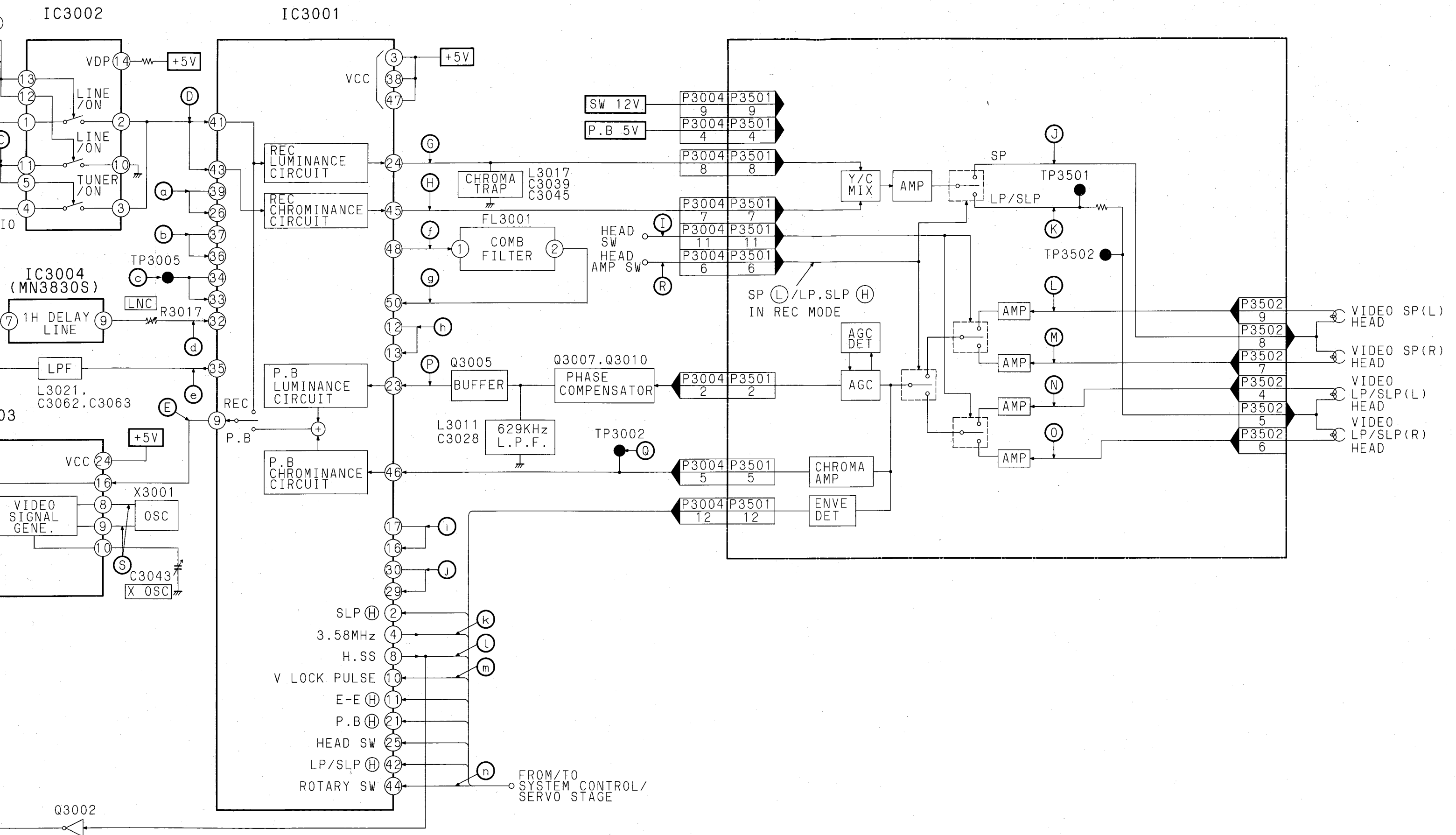
\*NOTE1: Try head cleaning.  
\*NOTE2: Check Cylinder FG/PG signal at Pin 47 of IC6001.

| FLOW OF TROUBLESHOOT → |                  |        |        |        |    |  |
|------------------------|------------------|--------|--------|--------|----|--|
| CHECK POINT            | (P)              | (Q)    | (E)    | (F)    | TV |  |
| IF NO                  | ↓                | ↓      | ↓      | ↓      | ↓  |  |
| CHANGE                 | IC3001<br>*NOTE1 | *NOTE2 | IC3003 | *NOTE3 |    |  |

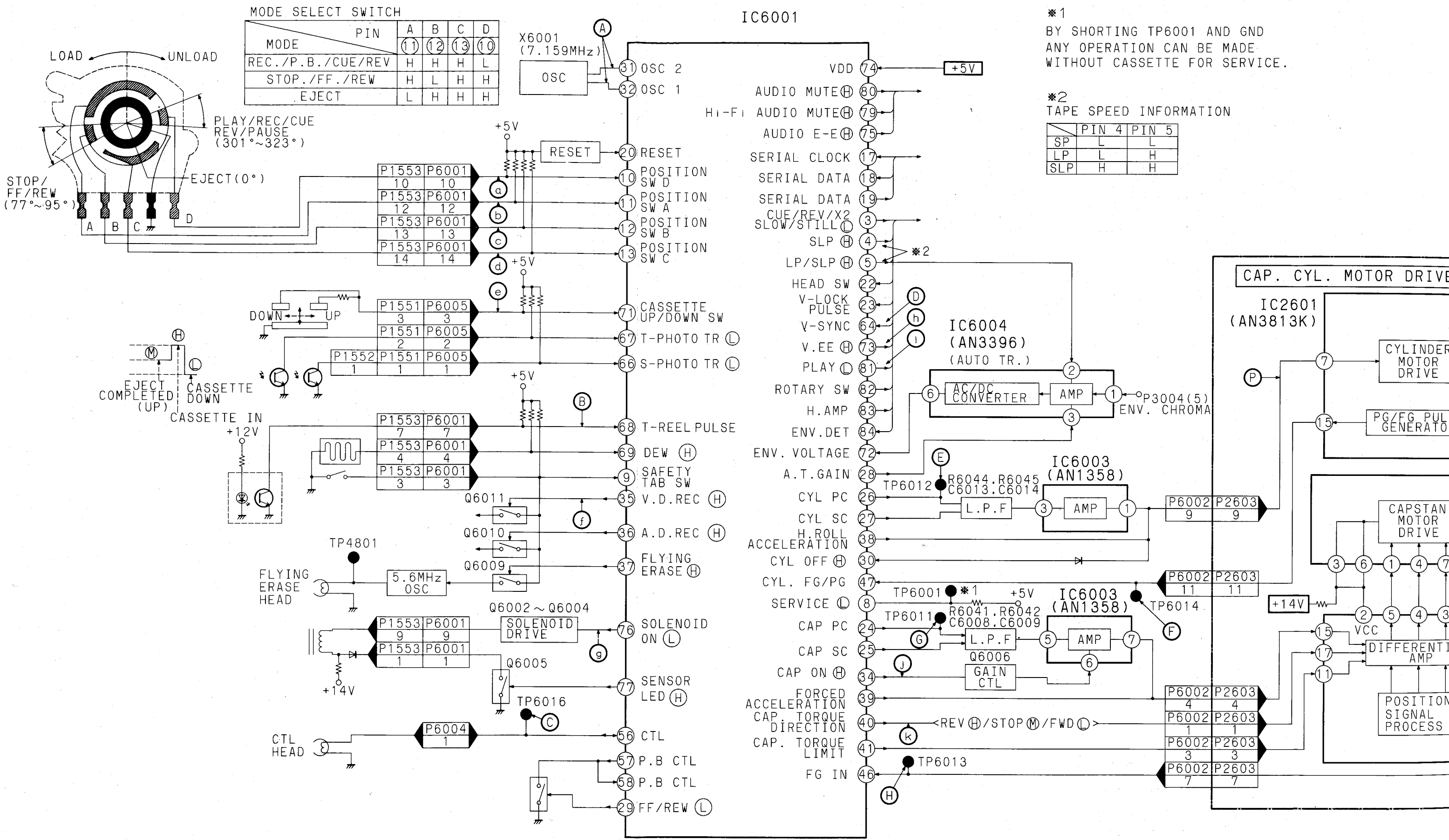
\*NOTE1: Try head cleaning and check Head Amp Shield Case or signals from (L) to (O), (I) and (R).  
\*NOTE2: Check signals from (I) to (L).  
\*NOTE3: Check RF Converter or Video Out Terminal.

VIDEO BLOCK DIAGRAM





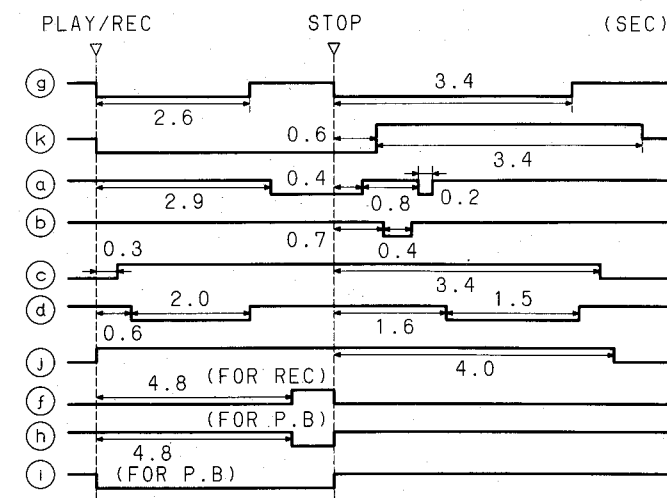
SYSTEM CONTROL & SERVO BLOCK DIAGRAM



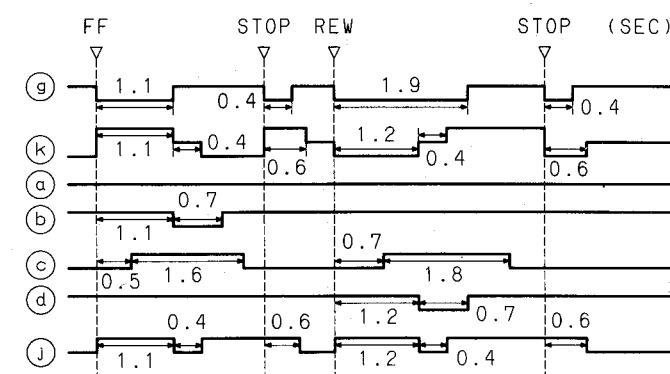
ATION



(2) TAPE LOADING/UNLOADING



(4) FF/REW CONTROL

2-12



# SYSTEM CONTROL & SERVO CHECKING PROCEDURE

| SYMPTOM             | FLOW OF TROUBLESHOOT → |                 |       |                 |              |         |         |
|---------------------|------------------------|-----------------|-------|-----------------|--------------|---------|---------|
| Dead or Malfunction | CHECK POINT            | Pin 74 (VDD 5V) | Ⓐ     | Pin 20 NORMAL ⑩ | Pin 14 (SCK) | Ⓐ~Ⓓ     | ※NOTE 2 |
|                     | IF NO                  | ↓               | ↓     | ↓               | ↓            | ↓       |         |
|                     | CHANGE                 | Power           | X6001 | IC6002          | IC6001       | ※NOTE 1 |         |

※NOTE 1: Adjust Gear Phase.

※NOTE 2: Check Power Circuit.

| SYMPTOM | FLOW OF TROUBLESHOOT → |         |         |         |  |  |  |
|---------|------------------------|---------|---------|---------|--|--|--|
| NO PLAY | CHECK POINT            | Ⓐ~Ⓓ     | Ⓕ       | Ⓑ       |  |  |  |
|         | IF NO                  | ↓       | ↓       | ↓       |  |  |  |
|         | CHANGE                 | ※NOTE 1 | ※NOTE 2 | ※NOTE 3 |  |  |  |

※NOTE 1: Adjust Gear Phase.

※NOTE 2: IC2601 (Cyl Drive) or Cylinder U.

※NOTE 3: IC2602 (Cap Drive) or Reel Sensor.

| SYMPTOM                                                                                                              | FLOW OF TROUBLESHOOT → |         |         |         |         |  |  |
|----------------------------------------------------------------------------------------------------------------------|------------------------|---------|---------|---------|---------|--|--|
| Distorted Playpayback Pix (1)<br> | CHECK POINT            | Ⓓ       | Ⓕ       | ※NOTE 3 | ※NOTE 5 |  |  |
|                                                                                                                      | IF NO                  | ↓       | ↓       | ↓       |         |  |  |
|                                                                                                                      | CHANGE                 | ※NOTE 1 | ※NOTE 2 | ※NOTE 4 |         |  |  |

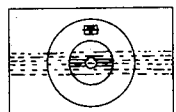
※NOTE 1: Check Video Circuit.

※NOTE 2: IC2601 or Cylinder U.

※NOTE 3: Open pin 7 of IC2601 and apply external 2.5V DC to the pin 7.

※NOTE 4: If the picture is still the same, change IC2601 or Cylinder U.

※NOTE 5: If the picture is improved, change IC6003 or IC6001.

| SYMPTOM                                                                                                                                   | FLOW OF TROUBLESHOOT → |         |         |         |         |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|---------|---------|---------|--|--|
| Distorted Playback Pix (2)<br><br>(Periodic Noise bar) | CHANGE POINT           | Ⓒ       | Ⓖ       | ※NOTE 3 | ※NOTE 5 |  |  |
|                                                                                                                                           | IF NO                  | ↓       | ↓       | ↓       |         |  |  |
|                                                                                                                                           | CHANGE                 | ※NOTE 1 | ※NOTE 2 | ※NOTE 4 |         |  |  |

※NOTE 1: Check tape travel and clean A/C head.

※NOTE 2: Check FG Head.

※NOTE 3: Open pin 15 of IC2603 and apply external 2.5V DC to the pin 15.

※NOTE 4: If the picture is still the same, change IC2602, 2603 or Capstan Motor.

※NOTE 5: If the picture is improved, change IC6003 or IC6001.

# SYSTEM CONTROL & SERVO CHECKING PROCEDURE

| SYMPTOM             | FLOW OF TROUBLESHOOT → |                 |       |                 |              |         |         |
|---------------------|------------------------|-----------------|-------|-----------------|--------------|---------|---------|
| Dead or Malfunction | CHECK POINT            | Pin 74 (VDD 5V) | Ⓐ     | Pin 20 NORMAL Ⓜ | Pin 14 (SCK) | ⓐ~ⓓ     | ※NOTE 2 |
|                     | IF NO                  | ↓               | ↓     | ↓               | ↓            | ↓       |         |
|                     | CHANGE                 | Power           | X6001 | IC6002          | IC6001       | ※NOTE 1 |         |

※NOTE 1: Adjust Gear Phase.

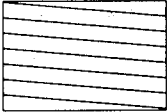
※NOTE 2: Check Power Circuit.

| SYMPTOM | FLOW OF TROUBLESHOOT → |         |         |         |  |  |  |
|---------|------------------------|---------|---------|---------|--|--|--|
| NO PLAY | CHECK POINT            | ⓐ~ⓓ     | Ⓕ       | Ⓑ       |  |  |  |
|         | IF NO                  | ↓       | ↓       | ↓       |  |  |  |
|         | CHANGE                 | ※NOTE 1 | ※NOTE 2 | ※NOTE 3 |  |  |  |

※NOTE 1: Adjust Gear Phase.

※NOTE 2: IC2601 (Cyl Drive) or Cylinder U.

※NOTE 3: IC2602 (Cap Drive) or Reel Sensor.

| SYMPTOM                                                                                                           | FLOW OF TROUBLESHOOT → |         |         |         |         |  |  |
|-------------------------------------------------------------------------------------------------------------------|------------------------|---------|---------|---------|---------|--|--|
| Distorted Playback Pix (1)<br> | CHECK POINT            | Ⓓ       | Ⓖ       | ※NOTE 3 | ※NOTE 5 |  |  |
|                                                                                                                   | IF NO                  | ↓       | ↓       | ↓       |         |  |  |
|                                                                                                                   | CHANGE                 | ※NOTE 1 | ※NOTE 2 | ※NOTE 4 |         |  |  |

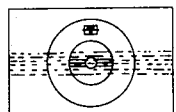
※NOTE 1: Check Video Circuit.

※NOTE 2: IC2601 or Cylinder U.

※NOTE 3: Open pin 7 of IC2601 and apply external 2.5V DC to the pin 7.

※NOTE 4: If the picture is still the same, change IC2601 or Cylinder U.

※NOTE 5: If the picture is improved, change IC6003 or IC6001.

| SYMPTOM                                                                                                                                   | FLOW OF TROUBLESHOOT → |         |         |         |         |  |  |
|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------|---------|---------|---------|--|--|
| Distorted Playback Pix (2)<br><br>(Periodic Noise bar) | CHANGE POINT           | Ⓒ       | Ⓗ       | ※NOTE 3 | ※NOTE 5 |  |  |
|                                                                                                                                           | IF NO                  | ↓       | ↓       | ↓       |         |  |  |
|                                                                                                                                           | CHANGE                 | ※NOTE 1 | ※NOTE 2 | ※NOTE 4 |         |  |  |

※NOTE 1: Check tape travel and clean A/C head.

※NOTE 2: Check FG Head.

※NOTE 3: Open pin 15 of IC2603 and apply external 2.5V DC to the pin 15.

※NOTE 4: If the picture is still the same, change IC2602, 2603 or Capstan Motor.

※NOTE 5: If the picture is improved, change IC6003 or IC6001.

# Hi-Fi CHECKING PROCEDURE

NOTE: Please use blank brackets to note additional information.

| SYMPTOM      | FLOW OF TROUBLESHOOT → |                   |                   |                   |        |        |         |
|--------------|------------------------|-------------------|-------------------|-------------------|--------|--------|---------|
| NO REC AUDIO | CHECK POINT            | IC4202<br>1, 13   | IC4202<br>2, 12   | Ⓐ Ⓒ               | Ⓑ Ⓓ    | Ⓔ      | ※NOTE 4 |
|              | IF NO                  | ↓                 | ↓                 | ↓                 | ↓      | ↓      |         |
|              | CHANGE                 | IC4701<br>※NOTE 1 | IC9001<br>※NOTE 2 | (L-CH)<br>※NOTE 3 | (R-CH) | IC4201 |         |

※NOTE 1: Check Input Terminal

※NOTE 2: Check signals from Ⓐ to Ⓙ and Tuner

※NOTE 3: Check IC4202, 3 and 4.

※NOTE 4: Try head cleaning Check Head Amp Circuit.

| SYMPTOM      | FLOW OF TROUBLESHOOT → |         |        |         |  |  |  |
|--------------|------------------------|---------|--------|---------|--|--|--|
| NO P.B AUDIO | CHECK POINT            | Ⓕ Ⓖ     | Ⓢ Ⓤ    | ※NOTE 1 |  |  |  |
|              | IF NO                  | ↓       | ↓      |         |  |  |  |
|              | CHANGE                 | ※NOTE 1 | IC4201 |         |  |  |  |

※NOTE 1: Try head cleaning.

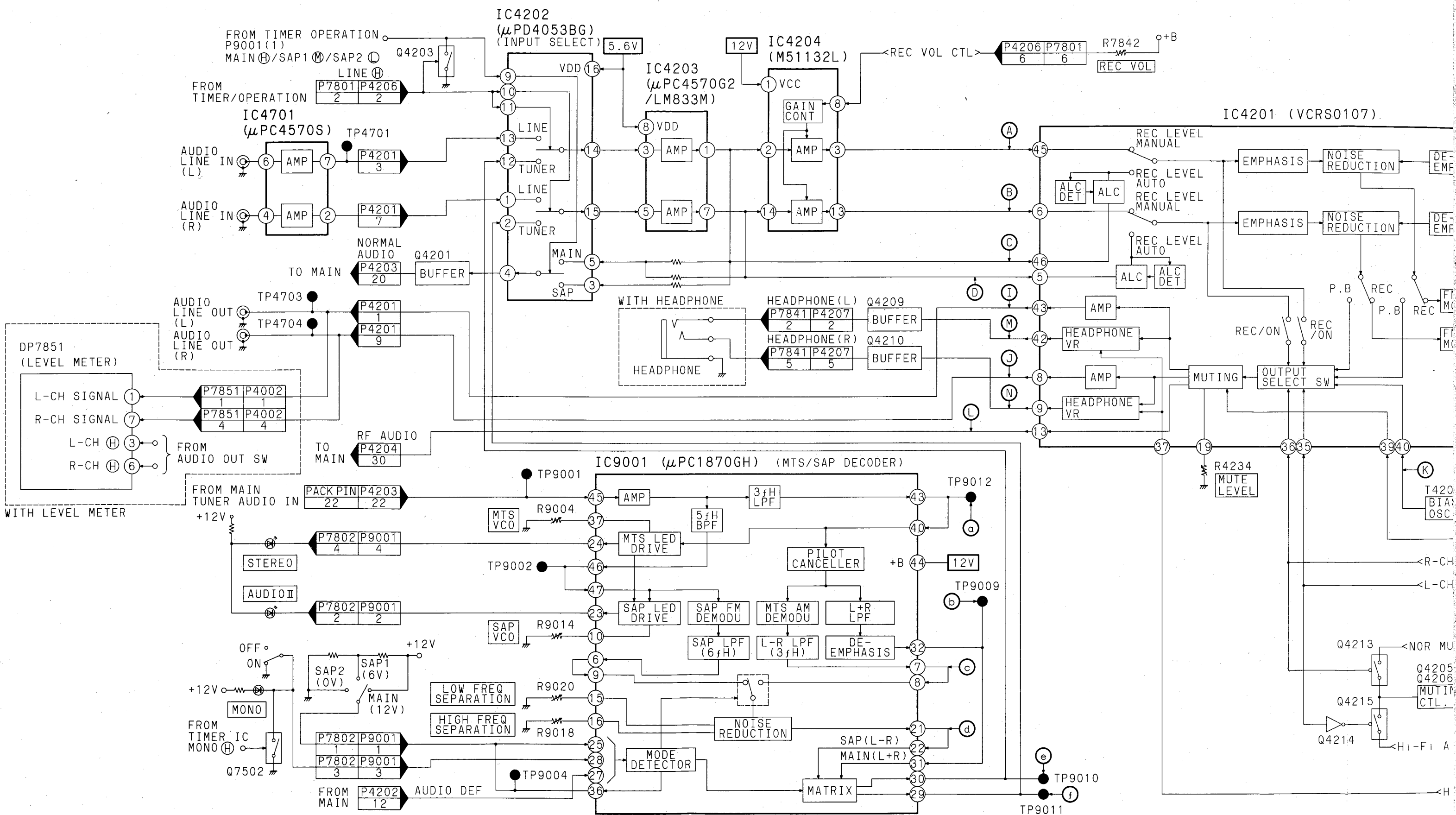
※NOTE 2: Check output Terminal.

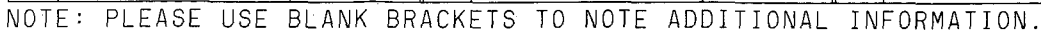
| SYMPTOM | FLOW OF TROUBLESHOOT → |  |  |  |  |  |  |
|---------|------------------------|--|--|--|--|--|--|
|         | CHECK POINT            |  |  |  |  |  |  |
|         | IF NO                  |  |  |  |  |  |  |
|         | CHANGE                 |  |  |  |  |  |  |

| SYMPTOM | FLOW OF TROUBLESHOOT → |  |  |  |  |  |  |
|---------|------------------------|--|--|--|--|--|--|
|         | CHECK POINT            |  |  |  |  |  |  |
|         | IF NO                  |  |  |  |  |  |  |
|         | CHANGE                 |  |  |  |  |  |  |

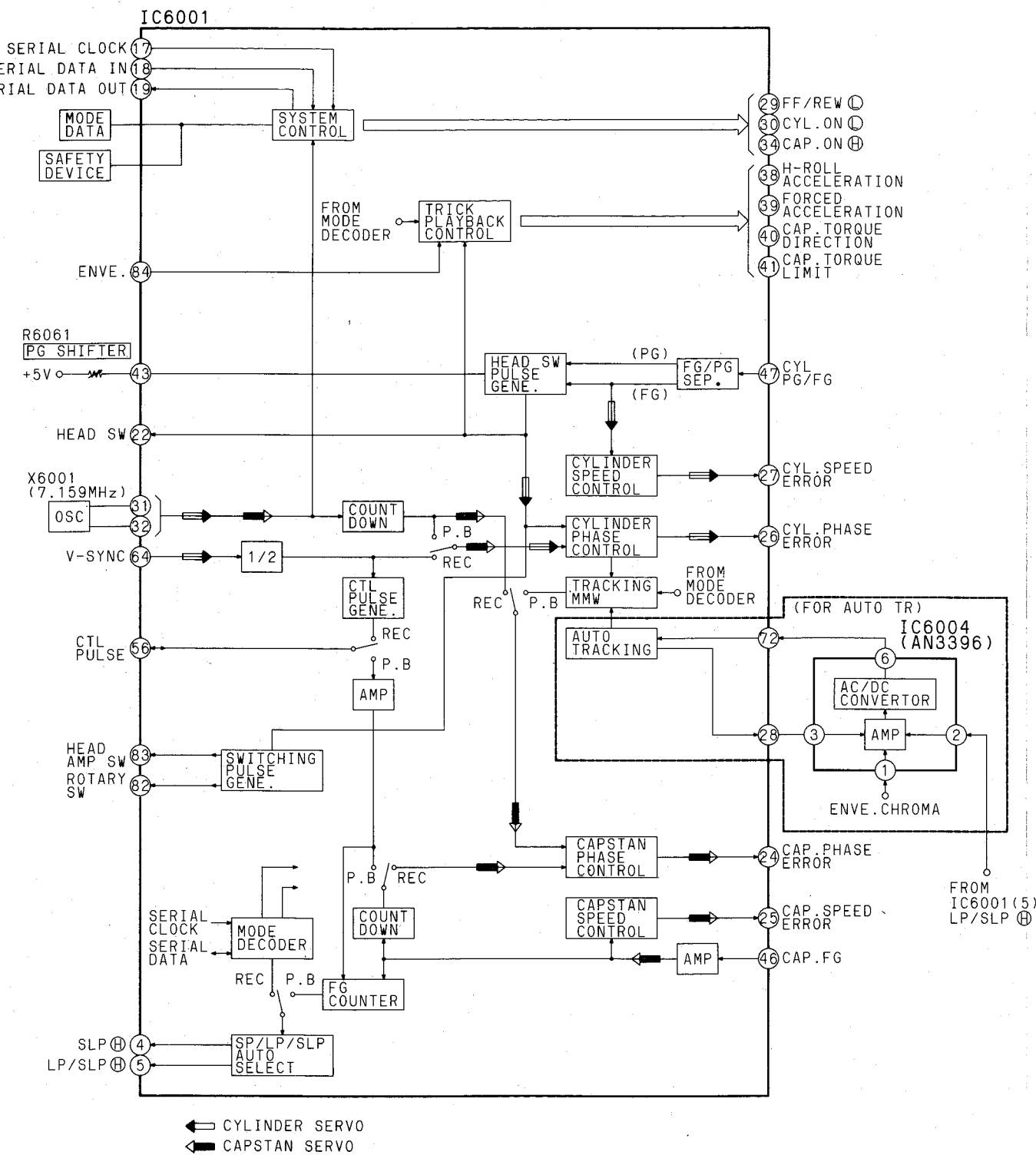
| SYMPTOM | FLOW OF TROUBLESHOOT → |  |  |  |  |  |  |
|---------|------------------------|--|--|--|--|--|--|
|         | CHECK POINT            |  |  |  |  |  |  |
|         | IF NO                  |  |  |  |  |  |  |
|         | CHANGE                 |  |  |  |  |  |  |

HI-FI BLOCK DIAGRAM



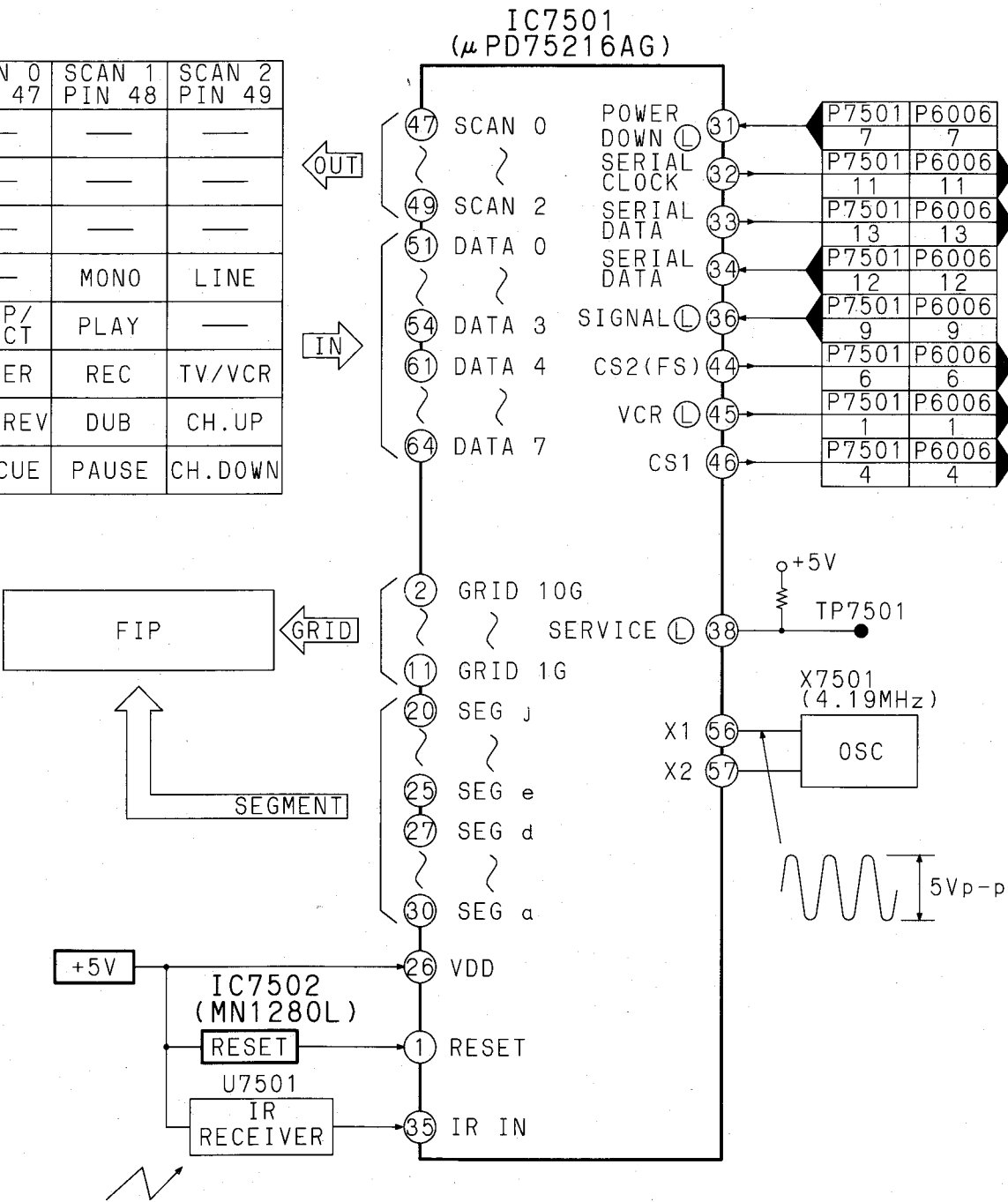


SERVO BLOCK DIAGRAM OF IC6001



TIMER OPERATION

| OUT IN           | SCAN 0<br>PIN 47 | SCAN 1<br>PIN 48 | SCAN 2<br>PIN 49 |
|------------------|------------------|------------------|------------------|
| DATA 0<br>PIN 51 | —                | —                | —                |
| DATA 1<br>PIN 52 | —                | —                | —                |
| DATA 2<br>PIN 53 | —                | —                | —                |
| DATA 3<br>PIN 54 | —                | MONO             | LINE             |
| DATA 4<br>PIN 61 | STOP/<br>EJECT   | PLAY             | —                |
| DATA 5<br>PIN 62 | POWER            | REC              | TV/VCR           |
| DATA 6<br>PIN 63 | REW/REV          | DUB              | CH. UP           |
| DATA 7<br>PIN 64 | FF/CUE           | PAUSE            | CH. DOWN         |



MECHANISM

- [SYMPTOM]  
Cassette Loading Problem
- [CAUSE]  
Release Lever Spring co and blinder panel of a c
- [REMEDY]  
The Release Lever Spring Release Lever
- [SYMPTOM]  
After few seconds sin the cassette is ejected.
- [CAUSE]  
Mechanical phase fault Plate (R) and Wiper Arr
- [REMEDY]  
Readjust the gear phase Wiper Arm-R-
- Note:  
Cracked gear of Wiper joint part causes the it is necessary to replace
- [SYMPTOM]  
Tape Loading Problem
- [CAUSE]  
Subloading fault due to
- [REMEDY]  
Replace the P5 Sector Ge
- Note:  
Install the P5 Sector G Sector Gear aligns with Arm Unit.
- [SYMPTOM]  
After tape loading immediately unloaded in
- Note:  
Symptom would be d condition of gear phase f
- (Example)  
No Eject, then Power is When the Review mode unloaded.
- [CAUSE]  
Gear phase fault between

MECHANISM SECTION

SYMPTOM

Cassette Loading Problem.

[CAUSE]

Release Lever Spring comes off the Release Lever and blinder panel of a cassette does not open.

[REMEDY]

The Release Lever Spring has to be hooked at the Release Lever

SYMPTOM

After few seconds since cassette loading starts, the cassette is ejected.

[CAUSE]

Mechanical phase fault between Rack-B-(1) of Side Plate (R) and Wiper Arm-R-

[REMEDY]

Readjust the gear phase between Rack-B-(1) and Wiper Arm-R-

Note: Cracked gear of Wiper Arm-R- and looseness of joint part causes the phase error. In this case, it is necessary to replace Main Shaft Unit.

SYMPTOM

Tape Loading Problem

[CAUSE]

Subloading fault due to damage of P5 Sector Gear.

[REMEDY]

Replace the P5 Sector Gear

Note: Install the P5 Sector Gear so that the hole of P5 Sector Gear aligns with the last tooth on the P5 Arm Unit.

SYMPTOM

After tape loading operation, the tape is immediately unloaded in Play or Rec mode.

Note: Symptom would be different depending on the condition of gear phase fault.

(Example)

No Eject, then Power is cut off. When the Review mode is activated, the tape is unloaded.

[CAUSE]

Gear phase fault between Sun Gear and Planet Gear.

[REMEDY]

Readjust the gear phase between Sun Gear and Planet Gear.

SYMPTOM

After tape loading and unloading operation, Power is cut off.

[CAUSE]

Fault of gear phase between Mode Select Switch and Pressure Roller Lift Cam.

(Example)

Play mode is not activated, then Power is cut off after few seconds..... clockwise gear phase fault. After cassette down, unit starts sub loading, tape loading and finally the tape is unloaded..... clockwise gear phase fault. Power is cut off..... counterclockwise gear phase fault.

[REMEDY]

Readjust the gear phase between Pressure Roller Lift Cam and Mode Select Switch.

SYMPTOM

During Rewind and Review, mechanical noise is heard.

[CAUSE]

Clutch Disk is not released completely from Drive Disk due to crack of Release Lever tip.

[REMEDY]

Replace the Release lever.

Note: When replacing, put Release Lever upon a Change Lever.

SYMPTOM

- 1. After Eject or Power key is pressed, Power is cut off.
- 2. When FF or REW mode is activated, unit goes Stop mode, then Power is cut off.

[CAUSE]

Abnormal action of Solenoid lever.

Due to wrong connection between Solenoid Core and Solenoid Lever, Solenoid Core is stranded on concave part of Solenoid Lever. Solenoid is locked and causes mechanical fault.

How to Check the Solenoid in Stop mode

- (1) correct position of Solenoid Lever.
- (2) correct position of Kick Lod.

|       |       |
|-------|-------|
| P7501 | P6006 |
| 7     | 7     |
| P7501 | P6006 |
| 11    | 11    |
| P7501 | P6006 |
| 13    | 13    |
| P7501 | P6006 |
| 12    | 12    |
| P7501 | P6006 |
| 9     | 9     |
| P7501 | P6006 |
| 6     | 6     |
| P7501 | P6006 |
| 1     | 1     |
| P7501 | P6006 |
| 4     | 4     |

